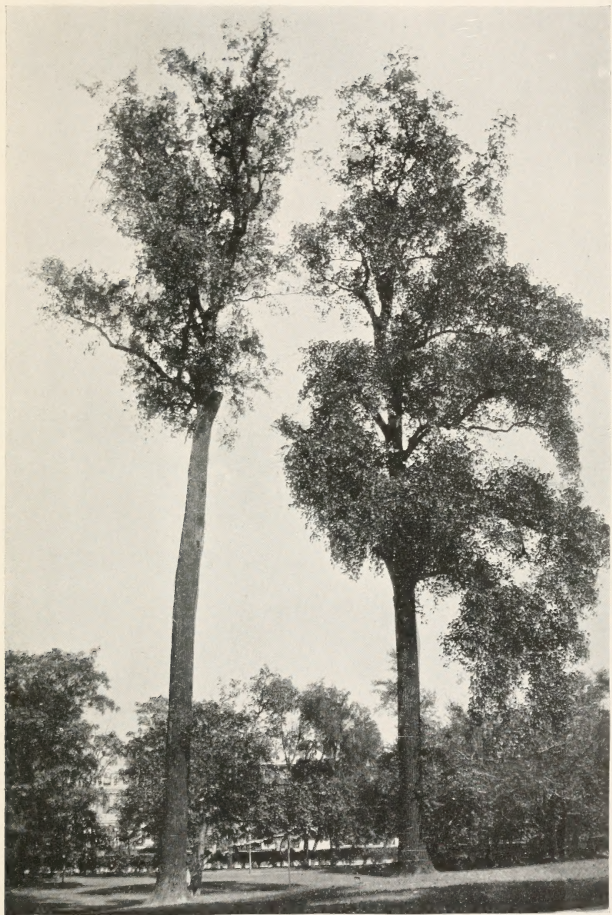


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TULIP TREES. CENTRAL PARK, LOUISVILLE, KY.

These are two of a group, forest grown; the largest 16 1-2 feet in circumference.

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Native Trees of Kentucky

A Handbook

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A Handbook

By Sarah Webb Maury

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Edition of
Kentucky Federation of Women's Clubs
Tulip Tree—Federation State Tree

Preface

There are few problems of more economic importance to the State of Kentucky at the present time than an adequate forest policy. Believing that, if the people of the State could be brought to a realization of the fact, that few regions of the world have a greater number of merchantable species of trees than Kentucky, they would establish and support such a forest policy, this volume descriptive of the State trees has been prepared.

The term "tree" has been given, regardless of size, to every woody plant which produces *one* main stem, bearing a definite crown; this feature distinguishes trees from shrubs which have *many* stems growing from the same roots.

Although any systematic arrangement of trees necessitates the use of botanical names, an effort has been made to use the smallest possible number, in order that the book may appeal to all persons interested in the forest conditions of the State. The sequence of families follows the order advocated by Engler and Prantl, the renowned German botanists, and the nomenclature is adopted from "The Check List of Forest Trees in the United States." Bulletin 17—Forest Service. For convenience, a list of the common names of the trees, native and naturalized in Kentucky has been added.

The manuscript was offered to the Kentucky Federation of Women's Clubs for publication of an unlimited first edition, provided the books were distributed free to the people of the State. This offer was accepted at the Annual Meeting in Owensboro, June, 1909.

Before going to press the manuscript was checked up by Mr. George B. Sudworth, Dendrologist of Forest Service; Dr. Hermann Von Schrenk, of St. Louis, and Mr. J. B. Atkinson, of Earlington, Ky.

The illustrations are from photographs given by Forest Service, Washington, D. C.; Prof. C. J. Norwood, Director of Kentucky Geological Survey; Mr. J. B. Atkinson, of Earlington, Ky.; Dr. Henry Chandler Cowles, of the University of Chicago, and from those made under the supervision of the Author.

Native Trees of Kentucky

All trees of the North Temperate region are seed-bearing plants. They are divided into two classes:

1. Gymnosperms—Naked seed plants.
2. Angiosperms—Covered seed plants.

CLASS I.—GYMNOSPERMS.

Gymnosperms have their ovules and seeds borne without covering on the face of scales. They are represented in Kentucky by the Pine Family.

PINE FAMILY—Conifers. Pinaceæ.

The conifers are the oldest living representatives of the pre-historic forests. They are commonly known as evergreen because with two exceptions, the Larch and Bald Cypress, they do not shed all their leaves at any given season.

The wood of the conifers is of the highest economic importance; soft and easy to work; usually resinous. Two pines growing in the South form the principal source of our turpentine and pine tar industries. Many of the trees are ornamental park trees. In Kentucky there are four divisions or genera of the conifers:

- A. Genus *Pinus*—Pines.
- B. Genus *Tsuga*—Hemlocks.
- C. Genus *Taxodium*—Bald Cypress.
- D. Genus *Juniperus*—Cedars.

The two chief characteristics of this family are:

1. Leaves—needle-like.
2. Fruit—a cone.

A. PINES—GENUS PINUS.

Kentucky is in the center of the most productive hard wood region of the world, and as a State, can not claim a large commercial supply of Pines. There are *four* native species in the State:

- a.* Short-leaf Pine—*Pinus echinata*.
- b.* White Pine—*Pinus strobus*.
- c.* Pitch Pine—*Pinus rigida*.
- d.* Scrub Pine—*Pinus virginiana*.

They all have a characteristic method of growth, a tall, continuous, tapering shaft and branches arranged in horizontal layers of imperfect whorls. The leaves are of two kinds, primary and secondary: primary—small, scale-like, forming a sheathe, falling early; secondary—long, needle-like, persistent in clusters of two to five. The flowers are of two kinds, staminate and pistillate, arranged in small catkins on *different parts* of the *same* tree.

The fruit, a woody cone of variously shaped scales, matures usually at the end of the second season. These cones often persist for many years, but shed the seeds at maturity. The seeds, usually winged, are borne in pairs at the base of the cone scales.

a. Short-leaf Pine—Pinus echinata.

Commercially, the Short-leaf Pine is Kentucky's most valuable conifer, commonly found throughout the eastern and southeastern counties. It is the "Yellow Pine," "Slash Pine" and "Old Field Pine" of the mountain vernacular.

The wood, an orange or yellow brown in color, is used for doors, sash and blinds, framing and interior finish.

This Pine and its relative, the Red Pine, are the only conifers that can successfully resist the scourge of forest fires. The seedlings and even older trees can have all their leaves burnt off without killing the trees. Seedlings from five to six years or older sprout from the roots; and young trees, when felled, are able to reproduce themselves by sprouts from cut-over stumps. These two unusual and valuable characteristics strongly recommend the Short-leaf Pine for profitable and systematic management of forest areas.

Tree—tall, slender, 50 to 60 feet high.

Bark—thick, covered with cinnamon brown scales.

Leaves—dark blue-green, flexible, in clusters of 2 or 3.

Fruit—cones, biennial, pendent; scales marked with strong transverse ridges.

b. White Pine—Pinus strobus.

White Pine is the largest of the conifers native to the eastern half of North America and reaches its best development in association with the hard woods. Formerly, it covered vast tracks of land in the Northern States and was the chief lumber tree of commerce. Kentucky, at the present time, can claim a growth of commercial value in but *three* counties, Lee, Wolfe and Morgan. It has been generally planted over the State. White Pine produces only from seed, and owing to the thinness of the bark, saplings are seriously injured by fire.

Horticulturally considered, it is one of the most stately and attractive conifers. The pronounced habit of whorled branching, so characteristic of this Pine, is due to the arrangement of buds on the twigs. Each twig has a circle of five buds around a central bud or leader: This leader grows upward and the five buds below develop into five radiate branches. The tips of the side branches repeat the same manner of growth.

Tree—tall; main trunk continuous, with horizontal, wide spreading branches.

Bark—thick, fissured with brown scaly ridges.

Leaves—long, soft, flexible, in clusters of 5.

Fruit—cones, long, pendent, biennial, falling at maturity.

c. Pitch Pine—*Pinus rigida*.

d. Scrub Pine—*Pinus virginiana*.

The Pitch and Scrub Pines are common in the mountain districts, where they are locally used for fences, fuel and charcoal. They are rich in resin, especially in the "pine knots."

Pitch Pine:

Tree—trunk stout, gnarled; branches stiff.

Bark—irregular, confluent ridges, with red-brown scales.

Leaves—stout, stiff, in clusters of 3.

Fruit—cones, perennial, persistent; cone-scales, with stiff prickles.

Scrub Pine:

Tree—trunk short, branches spreading, pendulous.

Bark—shallow fissures, with dark brown scales.

Leaves—deep, dark green, stout, in clusters of 2.

Fruit—cones, biennial, persistent; cone-scales, spiny.



SCRUB PINE.

B. HEMLOCKS—GENUS TSUGA.



The only conifer that bears its leaves on stems or petioles. Kentucky has one native species:

Canadian Hemlock—Tsuga canadensis.

The Hemlock is common throughout the mountains, along streams, and high up their steep, rocky banks.

Commercially, the wood is used as second-grade building material, and the bark contains tannic acid in paying quanti-

ties. Grown in the open, the Hemlock is a great favorite as an ornamental tree.

Tree—tall, pyramidal, with graceful branches, heavy with foliage.

Bark—furrowed into flat, confluent plates with gray-brown scales.

Leaves—stalked, short, flat.

Fruit—cones, small, pendent, annual; cone-scales, thin.



BALD CYPRESS.

C. BALD CYPRESS—GENUS TAXODIUM.

One species native in Kentucky:

Bald Cypress—Taxodium distichum.

The Bald or Deciduous Cypress is of very ancient lineage, at one time covering the hills and valleys of the North Temperate regions, and extending into Iceland and Greenland. Later, it could not hold its own with the advance of the pines and hardwoods and was forced by competition into the low places. It is now a typical swamp tree.

In Kentucky, small groves are reported on the lower Green River region and the bottom-lands of the Tennessee Valley, where the trees reach a diameter from three to seven feet. Their large, often hollow trunks, anchored by strong buttresses, stand in water a part of every year. Upright projections called "knees," a characteristic development of the root system, rise above the water from three to five feet.

Cypress is a typical coniferous wood, easily worked, of even, smooth grain, and beautiful figures. The varying colors of the wood indicate the locality in which the tree grew.

Cypress lumber does not stain nor decay in the piles, and imparts neither odor nor taste to liquids. It is what the scientists call "chemically inert." This characteristic recommends the wood for manufacture of all kinds of tanks, churns, bee-hives and incubators. Great durability and resistance to decay make Cypress of high value for the woodwork of green-houses, for foundation timbers, porch columns, rails and girders. It is also popular for interior finish and is being introduced as a substitute for White Pine in government ships.

So close is the method of manufacturing the wood that even the diseased logs known in trade as "pecky cypress" are used for crates, laths, shingles, covering for steam pipes and veneer core.

In parks Cypress is a highly ornamental tree.

Tree—tall, pyramidal, with fluted, flaring trunk.

Bark—thin, scaly, reddish brown.

Leaves—small, 2-ranked, annual.

Fruit—cones, small, generally in pairs, annual.

D. JUNIPERS—GENUS JUNIPERUS.

The Junipers differ in two points from other members of the Pine Family:

1. The flowers are borne on *separate trees*.
2. The fruit is not a true cone, but is composed of small fleshy scales, so coalescent in growth that they form a sweet, resinous berry. These berries are about the size of a pea, pale green at first, but later a dark blue covered with a glaucous bloom.

One native species in Kentucky:

Red Cedar—Juniperus virginiana.

Red Cedar, found everywhere in Kentucky, is of economic importance only in the South-central part of the State. It is a slow-growing, long-lived tree, tolerant of shade, but indifferent to varying conditions of soil and climate. The wood is light, soft, close-grained, red in color and fragrant. Its durability gives it a value for naval construction, for posts and for telegraph poles. It is used in small cabinet work, and is extensively consumed by the lead pencil industry, manufacturers of pencils often maintaining their own forests of Red Cedar. Owing to its thin, stringy bark and extensive root system, Red Cedar is easily damaged by fire. It suffers serious injuries from attacks of fungus growths; one disease, the Cedar Apple, is of some importance. There are three interesting phases of this Cedar Apple:

1. After spring rains, the fungus appears on the twigs of Cedar as a purplish-brown spongy mass, which later nearly encircles the twigs. When the apple is full grown, from the regular sections of its surface, there protrude orange-colored, tongue-like bodies of tangled threads, each thread ending in a spore.

2. These spores, scattered by the wind, germinate only when they fall upon the *Apple* tree, forming yellow patches of rust on leaves and twigs.

3. This "apple rust" generates spores, which germinate only when they are blown upon the branches of the *Cedar*.

A successful Cedar plantation must then avoid the vicinity of the Apple orchard.

Tree—tall, conical, becoming irregular with age.

Bark—separates in long, persistent shreds of a reddish color.

Leaves—two kinds; scale-like on old stems, awl-shaped on new stems.

Fruit—small, fleshy, dark blue berry.

CLASS II.—ANGIOSPERMS.

The Angiosperms include all plants that have the ovules and seeds covered by a more or less complicated floral envelope.

This class is divided into two sub-classes, one of which is represented by the Palm Family, not indigenous to Kentucky; the second sub-class contains the broad leaf type of deciduous trees, represented by the so-called soft and hard woods.

Two common characteristics of the deciduous trees are:

1. *Leaves*—netted veined; simple or compound, alternate, opposite or whorled.
2. *Fruit*—the matured ovary, represented by various forms and structures; nuts, acorns, berries, pods, samaras, capsules.

WILLOW FAMILY—Saliciaceae.

Considering the trees in their natural order of development, the Willow Family ranks as the earliest type among deciduous trees.

The family characteristics are:

1. *Trees*—water-loving, rapid-growing.
2. *Leaves*—alternate, simple.
3. *Flowers*—drooping catkins of two kinds, staminate and pistillate on *separate* trees.

It is composed of two genera:

- A. Genus *Populus*—Poplars.
- B. Genus *Salix*—Willows.

The Poplars differ from the Willows in *three* points:

1. *Trees*—large.
2. *Buds*—large and resinous.
3. *Leaves*—broad, on long stems.

The leaf stems of the Poplars are laterally flattened; the trembling, restless motion of the leaves is due to this peculiarity.

In Kentucky, Poplars are represented by three native species:

- a. Cotton-wood—*Populus deltoides*.
- b. Swamp Cotton-wood—*Populus heterophylla*.
- c. Large-toothed Aspen—*Populus grandidentata*.

a. Cotton-wood—Populus deltoides.

The Cotton-wood is one of the large trees found in moist meadows and along streams. Grown in the open, its branches are low, thick and spreading, easily fractured by the wind.

The wood, light and soft, is used extensively for wood pulp, excelsior and fuel.

The tree is particularly adapted for protecting lands subject to overflow from debris or erosion, and for ornamental planting along canals.

Deltoides refers to the shape of the leaf, which has the form of the Greek letter, Delta.

Tree—trunk tall, 50 to 80 feet, often 4 feet in diameter.

Bark—gray-green, thick and deeply fissured; twigs smooth with long, resinous buds.

Leaves—broadly triangular, toothed, long pointed, firm in texture.

Fruit—long capsules; seeds numerous, covered with cottony hairs.

b. Swamp Cotton-wood—Populus heterophylla.

The Swamp Cotton-wood or Downy Poplar is recorded as the fastest growing tree native to America.

In Kentucky its swamp associates are Red Maple, Tupelo, Sweet Gum and the water-loving Oaks. The Cotton-wood's supreme intolerance of shade soon causes it to outstrip its competitors and assume the dominant position in the swamp.

The wood is soft and extensively used for cheap furniture, veneer core, and pulp wood.

The annual seed production is abundant; the seeds are equipped with fine, cottony hairs.

A distinctive feature of this tree is the orange-colored pith.

Tree—large, with small crown.

Bark—brown, thick, scaly like Shagbark Hickory.

Leaves—broad and long, toothed, with cottony lining.

Fruit—pointed capsules; seeds covered with silky down.

c. Large-toothed Aspen—Populus grandidentata.

In habit, distribution, flowers and flattened leaf stem, the Large-toothed Aspen resembles the other members of the genus. The conspicuously large, incurved teeth on the scalloped margins of the leaves are responsible for its descriptive name.

The weak, soft wood is used for paper pulp.

Tree—medium size, with narrow, rounded top.

Bark—thin, pale brownish green, fissured.

Leaves—heart-shaped at base, coarse, thick, cottony on under side, coarsely toothed.

Fruit—cone-shaped, hairy capsules, filled with downy seeds.

B. WILLOWS—GENUS *SALIX*.

There are three species native to Kentucky:

- a. Black Willow—*Salix nigra*.
- b. Longleaf Willow—*Salix fluviatilis*.
- c. Pussy Willow—*Salix discolor*.

The Willows are medium sized trees, characterized by short, thick trunks, many low branches, and furrowed, scaly bark. The leaves are typically long and slender, short stemmed, tapering at both ends, showing a variety of greens. As the stumps sprout easily and the twigs root freely, the problem of reproduction among Willows is simple. This rapid growth, sturdiness and extensive branching make Willows valuable for wind-break planting.

The bark yields an important drug.

Next to Oaks, Willows have more natural enemies among scales, borers and leaf eaters than any other trees, while the havoc among them from fungus diseases is of economic importance.

a. Black Willow—Salix nigra.

Tree—largest of the Willows.

Bark—black, shaggy.

Leaves—green on both sides, with a persistent pair of small, heart-shaped stipules at the base.

Fruit—capsules in loose clusters.

b. Longleaf Willow—Salix fluviatilis.

Longleaf or Sand-bar Willow is peculiarly an American type.

Tree—small, much branched.

Bark—dark brown, scaly.

Leaves—narrow, 2 to 6 inches long, silky when young, coarsely toothed, tapering at both ends.

Fruit—capsules light brown, with short stem.

c. Pussy or Glaucons Willow—Salix discolor.

Tree—small, shrub-like, with purplish twigs.

Bark—brown, tinged with red.

Leaves—thick, firm, silvery white below.

Fruit—capsules cylindrical, with long points.

WALNUT FAMILY—Juglandaceae.

The name of this family is a contraction of the Latin, Jovis glans, the nut of Jupiter; it is represented by two genera:

- A. Genus *Juglans*—Walnuts.
- B. Genus *Hicoria*—Hickories.

They have *four common* features:

- 1. Aromatic hard wood.
- 2. *Leaves*—alternate, compound.
- 3. *Flowers*—catkins of two kinds; staminate and pistillate on the *same* tree.
- 4. *Fruit*—woody nut enclosed in a fibrous husk.

They have *two different* characteristics:

In Walnut:

- 1. Twigs have chamfered pith.
- 2. Nuts are rough, with persistent, undivided husk.

In Hickory:

- 1. Twigs have solid pith.
- 2. Nuts are smooth with a four-valved divided husk.

A. WALNUT—GENUS JUGLANS.

The Walnut of Kentucky has two species:

- a. Black Walnut—*Juglans nigra*.
- b. White Walnut—*Juglans cinerea*.



BLACK WALNUT GROVE. EARLINGTON, KY.

Twenty years old. Grown from seed.

a. Black Walnut—Juglans nigra.

In the original hardwood forests of the State, the Black Walnut was nowhere found in pure stands, but associated with Maples, Oaks, Hickories, Basswood and Cherry. The natural conditions for growth are the rich, low bottom lands or fertile hillsides, which are protected from cold, destructive winds. In these situations, the trunk lengthens into a tall shaft without branches for a distance of from 50 to 60 feet. Because the wood split easily and was durable, the early settlers cleared the timber off ruthlessly for fence posts and rails; later, it was so extensively cut for furniture, cabinet work and gun stocks that the present stand in Kentucky is mostly a scattered second growth. In the market it is priced with Mahogany; a large, well grown forest Walnut is worth more than the best acre of farm land.

The word "feather" is the name applied to the cone-shaped piece of figured wood in the crotch of a tree. The "feather" in Walnut is highly prized as a material for fancy veneers in cabinet work, and is especially used in the manufacture of high-priced gun stocks. The burls or blisters, caused by abrasions or other injuries in the bark of Walnut, are also valuable for special veneers. Walnut roots are now carefully dug out and highly prized for their beautiful figures by manufacturers of hardwood veneers.

The Walnut does not reproduce by suckers; the stumps sprout sparingly, but the seeds, if planted under favorable conditions, grow rapidly. A tree 12 to 15 years old will begin to bear nuts, and is large enough for fence posts. The foliage is thin, appearing late in the spring and falling early in the autumn, thus giving a good opportunity for a rich undergrowth of blue grass for cattle in small plantations.

Tree—in the open, short, with massive symmetrical crown.

Bark—dark, rough, broadly furrowed.

Leaves—pinnately compound; leaflets arranged in sessile pairs, aromatic.

Fruit—an edible nut, enclosed in an aromatic, spongy, persistent husk.



BLACK WALNUT. BEAVER CREEK, FLOYD CO., KY.

b. White Walnut—Juglans cinerea.

The White Walnut or Butternut is found in second growth throughout the State, but is most common in the mountain regions.

The wood is of a light brown color, with satiny lustre. It is much used for furniture, interior finish and veneering. The inner bark has cathartic properties, and the husks of the nuts furnish a yellow dye.

The distinctive features of White Walnut which serve to distinguish it from Black Walnut are:

Bark—lighter gray, with broader ridges.

Young branches and leaf stems covered with clammy hairs.

Leaves—usually with a long-stemmed, terminal leaflet.

Fruit—in clusters of 2 to 5; husks sticky, oblong.

B. HICKORIES—GENUS *HICKORIA*.

The Hickories are found only in American forests, and with one exception are confined to the States east of the Rocky Mountains.

Hickory is an Indian name, derived from a drink which the Indians made by pounding the nuts in water.

In Kentucky, Hickories are found mixed with other hardwoods in rich, fertile soil where a long, vigorous taproot can penetrate easily into a moist sub-soil. Forest-grown, the whole group has the characteristic habit of a tall, tapering shaft, reaching a height of from 60 to 100 feet, with a trunk from 2 to 4 feet in diameter.

The wood, tough, strong and flexible, is extensively used in the manufacture of farm implements, carriages and wagons. As fuel, Hickory excels all other wood. There is an increasing demand for the timber, second growth finding a ready market; young sprouts, because of their flexibility and toughness, are used in making baskets and barrel hoops. A Hickory five years old has a money value. They are valuable nut trees; Hickory orchards under systematic cultivation are considered paying investments.

Stately and picturesque, they are highly ornamental for parks and lawns.

The Hickories, characterized by nuts with thick outer husks and hard shells, provide most of the desirable wood of this genus. They are represented in Kentucky by six species:

- a.* Shagbark—*Hicoria ovata*.
- b.* Kingnut—*Hicoria laciniosa*.
- c.* Black Hickory—*Hicoria glabra*.
- d.* Mockernut—*Hicoria alba*.
- e.* Pecan—*Hicoria pecan*.
- f.* Bitternut—*Hicoria minima*.

a. Shagbark Hickory—Hicoria ovata.

The Shagbark, often called Shellbark or Scalybark, is the best known of this family because of its liberal distribution.

Tree—tall, slender, with narrow crown.

Bark—light gray, separating into long, loose plates attached in the middle; young bark, light and smooth.

Leaves—5 to 7 leaflets; terminal one, broad; lower pair, small.

Fruit—nuts small, white, sweet and edible.

b. Kingnut—Hicoria laciniosa.

The Kingnut, often called Bignut Hickory, is similar in appearance to Shagbark. It grows mainly in the rich bottom lands that are often subject to overflow.

Tree—tall, straight and slender, with short branches.

Bark—less scaly, branchlets stout, a yellow or orange color.

Leaves—7 to 9 leaflets, leaf stalk abruptly thickened at base, persistent and curling back after leaf-fall in autumn.

Fruit—nuts large, white; kernel, sweet.

c. Black Hickory—Hicoria glabra.

The Black Hickory, improperly called Pignut and often known in the trade as "Switch Top," furnishes the bulk of Hickory cut in Kentucky.

Tree—smaller than Shagbark.

Bark—smooth, becoming slightly flaked in advanced years.

Leaves—3 to 7 leaflets, leaf stalks, slender, smooth.

Fruit—nuts, rounded both ends.



BLACK HICKORY. MERCER CO., KY.

Height 97 feet.

d. Mockernut—Hicoria alba.

This is known as Bigbud or White Hickory. The wide sap wood, which is white, justifies the trade name, White Hickory.

Tree—slender, often with a crooked trunk.

Bark—ridged, never scaly, twigs hairy.

Leaves—5 to 9 leaflets, fragrant; leaf stalk hairy; terminal winter buds, large, downy.

Fruit—nuts, red-brown with strongly scented kernel, very small.

e. Pecan—Hicoria pecan.

The Pecan, formerly only valuable as a nut tree, is now becoming prominent in the lumber markets.

Tree—tall, with thick trunk and wide top.

Bark—red-brown, deeply and narrowly furrowed.

Leaves—11 to 15 leaflets, with short stalks.

Fruit—nuts, red-brown, cylindrical, shell thin, kernel sweet, edible.

f. Bitternut—Hicoria minima.

The Bitternut or Willow Hickory, finds its southern limit in Kentucky. This is a rapid growing, ornamental tree.

Tree—tall, slender, with narrow sap region.

Bark—reddish gray, shallow fissures.

Leaves—5 to 9 leaflets, leaf stalk, hairy.

Fruit—nuts, gray, shell thin, kernel bitter.

BIRCH FAMILY—*Betulaceae*.

The Birch Family consists of five divisions or genera, found abundantly in the cooler portions of the North Temperate Zone.

There are three genera of these trees in Kentucky, but no member of this family noticeably affects the forests of the State.

A. Genus *Carpinus*—Hornbeam.

B. Genus *Ostrya*—Hop Hornbeam, Ironwood.

C. Genus *Betula*—Birches.

The chief characteristics of these genera are:

1. Leaves—alternate, simple, toothed.
2. Flowers—catkins of two kinds: staminate and pistillate
on the *same* tree.
3. Fruit—cone-like structure of leafy scales.

A. HORNBEAM—GENUS *CARPINUS*.

American Hornbeam—Carpinus caroliniana.

The American Hornbeam is a small tree, growing everywhere in Kentucky along waterways, under the shade of taller trees.

The wood is dense, hard and so difficult to work that it has merited the name of Hornbeam.

The trunk is characterized by long sinewy swellings that twist slightly up to the branches. The close gray bark gives the name Water Beech to the tree. It is of slow growth, but well adapted for ornamental planting.

Tree—low, with irregular branches, slender, stiff twigs.

Bark—close, bluish gray, smooth like Beech.

Leaves—long, pointed, irregularly doubly toothed, unequal sided at base.

Fruit—loose terminal clusters of leaf-like, 3-lobed bracts, each containing a pair of small, hard nuts.

B. HOP HORNBEAM—GENUS *OSTRYA*.

Ironwood—Ostrya virginiana.

The Ironwood or Hop Hornbeam occurs among the low trees, forming the understory of dry fertile woodlands throughout the State. The wood is close-grained, so hard and tough that it is known in commerce as Ironwood, and is used for small articles where durability is a necessity; such as mallets, wedges, tooth-handles and levers. It resembles Birch in leaf spray and arrangement of green catkins, which hang all winter in groups of three from the ends of branches. The fruit so closely resembles the fruit of the garden Hop vine that it has given the name to the tree.

Tree—small, slender round head, often broad as high.

Bark—light brown, furrowed into scaly ridges which flake off.

Leaves—thin, doubly toothed, long pointed with short hairy stems.

Fruit—clusters of bladder-like leaves, each containing a small, hard seed.

C. BIRCHES—GENUS *BETULA*.

There are three species native in Kentucky:

- a.* Water Birch—*Betula nigra*.
- b.* Yellow or Gray Birch—*Betula lutea*.
- c.* Black Birch—*Betula lenta*.

The Birches are trees of singular beauty because of their graceful branches, their tattered bark, and delicate leaf spray. They grow rapidly from seed, are easily transplanted and flourish best in the forests when associated with other trees.

The young bark of all Birches is conspicuously marked with horizontal slits or lenticels, frequently separating into thin, papery plates. The wood, often called American Mahogany, is close-grained, hard, tough, and capable of a fine satiny finish.

Because of the richness of its color and the beauty of its grain, the Birch industry has been highly developed for house trimmings, especially for floors and doors. The hardness of the wood makes it of great service in boat construction, and in the manufacture of ox-yokes, tools and hubs.

Curly growth in Birch commands a high price in the veneer factories. The curl runs lengthwise of the tree, making the figures of a different type from those of Tulip Trees or Ash.

a. Water Birch—Betula nigra.

The water-loving Birch is abundant in Kentucky on the banks of streams, especially in the mountain regions.

Tree—tall, usually divided into several main limbs slightly spreading.

Bark—dark, reddish brown, peeling freely in thin layers.

Leaves—1 to 3 inches long, doubly toothed, somewhat lobed, midrib stout.

Fruit—cones, erect, cylindrical, stalked; nuts, oval with broad wings.

b. Yellow or Gray Birch—Betula lutea.

The Yellow or Gray Birch is rare except in the higher mountains.

Tree—large, with drooping lower branches, delicate spray.

Bark—conspicuously silver gray or yellow, peeling freely, bitter.

Leaves—3 to 4 inches long, doubly toothed, midrib stout, veins prominent.

Fruit—cones erect, often stalked; nuts oblong, acute at both ends, wider than its wings.

c. Cherry or Black Birch—Betula lenta.

The Black Birch is common through the mountains and found scattered through the western part of the State. It has several common names, Cherry Birch, Sweet Birch, Mahogany Birch, each derived from a prominent character of the tree. The outer bark of the middle-aged trunks and young branches is smooth and shiny like the garden Cherry tree. The inner bark is spicy and sweetly scented, yielding by distillation a birch oil which is identical with wintergreen. This oil is used for flavoring and is the essential agent in a medicine for rheumatism.

Due to the difference between the annual rings, the wood has a clouded effect and, when cut for veneer, is strongly figured like Mahogany.

Tree—tall, graceful, with drooping lower limbs.

Bark—smooth, dark brown, shiny in young trees, becoming deeply fissured in old trees.

Leaves—2 to 6 inches long, doubly toothed, veins prominent on under side.

Fruit—cones, erect, sessile; nuts with narrow wings.

BEECH FAMILY—Fagaceae.

Commercially and horticulturally, the Beech Family is the largest and most prominent among broad-leaved trees of North America. It is divided into three genera, found abundantly in the forests of Kentucky.

- A. Genus *Fagus*—Beech.
- B. Genus *Castanea*—Chestnuts.
- C. Genus *Quercus*—Oaks.

They are all trees of valuable hard wood and long life; characterized by

1. Leaves—alternate, simple, lobed or scalloped.
2. Flowers—two kinds on the *same* tree.
3. Fruit—prickly burs or open scaly cups, containing nuts.



American Beech—Fagus ferruginea.

In rich, alluvial bottom lands or low fertile hillsides of Kentucky, the Beech forms pure stands of considerable extent; this gregarious habit is due to its tolerance of shade and its three successful modes of reproduction:

1. An abundant crop of seedlings.
2. An Extensive root system growing near the surface sending up many young shoots.
3. Cut-over stumps sprouting readily from the wood next to the bark.

Commercially, Beech is gaining in importance; the wood, so subject to decay in contact with the soil, has now been made prominent in the market by improved methods of preservation. It is used for railroad ties; in house construction for joists; it competes with Maple, Birch and Oak for flooring, and is serviceable for agricultural implements, for household utensils, for building sluices and dams.

As Beech demands good soil and is of slow growth, its place in the forest, under systematic management, will be given in the future to faster growing trees; to Tulip Trees, Ash, Basswood, Hickory and other commercial hard woods.

As an ornamental shade tree, the Beech has no rival. Its habit of low extensive branching and its massive foliage of varying color, offer great attractions for landscape planting.

Tree—large, round-topped with horizontal and drooping branches.

Bark—close, smooth, light gray.

Leaves—thin, taper-pointed, prominent veins ending in teeth at the margin.

Fruit—annual burs with recurved prickles, containing two triangular, edible nuts.

B. CHESTNUTS—GENUS *CASTANEA*.

There are *two* species native to Kentucky:

- a.* Chestnut—*Castanea dentata*.
- b.* Chinquapin—*Castanea pumila*.

a. Chestnut—Castanea dentata.

The Chestnut is among the largest of the hardwood trees. As its best development depends more upon good drainage than rich soil, it is found most abundantly in the mountain regions above 1200 feet. It is common through the upper Green River region, but nowhere grows lustily on limestone soil.

The tannic acid in the wood preserves it from decay when in contact with the soil, so that the timber is in great demand at a good price for mine timber, railroad ties, telegraph and



telephone poles. The Chestnut is such a rapid grower that two crops of poles can be grown in the same time that most trees produce one crop of saw timber. For cabinet work and furniture, the lumber approaches the Oak in value. The nuts are also of commercial importance. Grown in the open, the Chestnut is highly prized for its depth of shade and beauty of foliage and flowers.

As a forest tree it is little troubled by insects or fungi, but park trees, in the last two years, have been killed in great numbers by a fungus growth that has not yet been checked.

The fragrant flowers bloom in mid summer: staminate, in long cream-colored catkins, clustered in tufts at the tips of the new growth; pistillate, inconspicuous nut flowers, solitary, or few below the staminate, on the same green shoots.

Tree—tall, with large trunk and broad spreading branches.

Bark—brown, thick, furrowed into flat oblique ridges.

Leaves—long, elliptical, tapering at both ends, regularly veined, conspicuously toothed; appearing late.

Fruit—annual spiny burs opening after frost; nuts flattened on one side, hairy at apex, scarred at base, sweet and edible.

b. Chinquapin—Castanea pumila.

The Chinquapin is found in dry, sandy situations throughout the State.

The wood, hard and strong, is durable in contact with the soil and is much used for fence posts and railroad ties.

As an ornamental tree, the Chinquapin is worthy of a place in our parks and lawns.

The flowers, appearing in May or June, are of two kinds, staminate and pistillate, borne on the *same* tree.

Tree—small, trunk short, branches slender.

Bark—broken in loose brown scales.

Leaves—oblong, thick, sharply toothed, prominently veined.

Fruit—spiny burs, lined with silky hairs, containing usually but one nut, sweet and edible.

C. OAKS—GENUS *QUERCUS*.

The Oaks are represented in Kentucky by more large trees than any other genus or family.

They are a splendid feature in the landscape and of the highest economic rank in the commerce of the State.

Oaks are divided into *two* distinct groups, according to their acorns and the margins of the leaves.

1. White Oak group has *annual* acorns, *rounded* leaf lobes; represented in Kentucky by eight species:

- a.* White Oak—*Quercus alba*.
- b.* Bur Oak—*Quercus macrocarpa*.
- c.* Post Oak—*Quercus minor*.
- d.* Overcup Oak—*Quercus lyrata*.
- e.* Chestnut Oak—*Quercus prinus*.
- f.* Chinquapin Oak—*Quercus acuminata*.
- g.* Swamp White Oak—*Quercus platanoides*.
- h.* Basket Oak—*Quercus michauxii*.

The first four are deeply lobed, the others slightly lobed or scalloped, like Chestnut.

2. Black Oak group has *biennial* acorns, and sharp spiny-pointed leaf lobes; represented in Kentucky by thirteen species:

- a.* Red Oak—*Quercus rubra*.
- b.* Black Oak—*Quercus velutina*.
- c.* Scarlet Oak—*Quercus coccinea*.
- d.* Texan Oak—*Quercus texana*.
- e.* Pin Oak—*Quercus palustris*.
- f.* Spanish Oak—*Quercus digitata*.
- g.* Swamp Spanish Oak—*Quercus pagodaefolia*.
- h.* Black Jack—*Quercus marilandica*.
- i.* Shingle Oak—*Quercus imbricaria*.
- j.* Willow Oak—*Quercus phellos*.
- k.* Bear Oak—*Quercus nana*.
- l.* Water Oak—*Quercus nigra*.
- m.* Laurel Oak—*Quercus laurifolia*.

No. 1. *a. White Oak—Quercus alba.*

The White Oak, so called because of its pale gray bark, is at this time the most widely distributed, most abundant and most valuable tree of our Kentucky forests, where it reaches a magnificent size. It reproduces itself by seeds and sprouts, has a long tap root reinforced by an extensive system of lateral roots. For thrifty growth, it does not demand a rich soil, but prefers well-drained, protected situations, with plenty of light.

The wood of the White Oak outranks all other species in general usefulness. It is in the highest demand for ship building and heavy construction work, for vehicles, farm implements, railroad ties, posts, interior finish and furniture. Its extensive use for tight cooperage has given it the name of Stave Oak. In parks, it is highly prized for its symmetry of form and attractive coloring.

The flowers appear when the leaves are half grown: staminate, in clusters of long yellow tassels; pistillate, or nut flowers, in pairs on short stalks.

Tree—very broad, with stout, spreading, irregular branches.

Bark—gray, with shallow fissures in flat ridges.

Leaves—5 to 9 inches long, with 5 to 7 obliquely ascending lobes which are themselves often slightly lobed; sinuses very deep.

Fruit—acorns, long and slender, nuts enclosed in shallow scaly cups. These mature early every autumn, fall immediately and germinate readily in fresh soil or beds of leaves. No acorns are found on White Oak in winter.



WHITE OAK—*QUERCUS ALBA*. HOPKINS CO. KY.

No. 1. *b. Bur Oak—Quercus macrocarpa.*

The Bur or Mossy Cup Oak, the largest of Kentucky's Oaks, is found in low wet grounds west of the mountains.

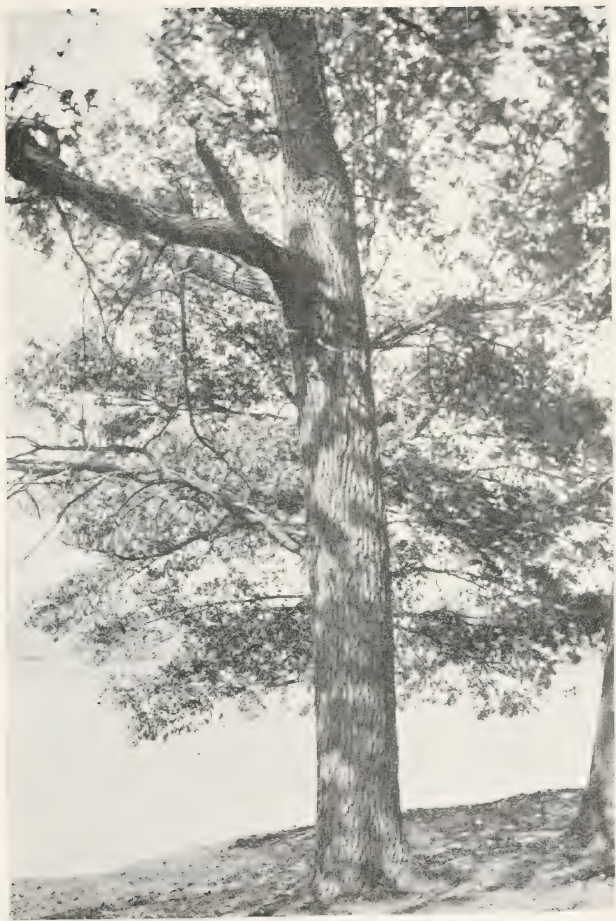
The wood is sold with White Oak in the lumber markets. The distinguishing features of Bur Oak are: (1) a mossy fringe about the rim of the large deep cup, (2) large, unequally divided leaves, (3, corky winged branches.

Tree—large and heavy, with spreading, shaggy, corky-winged branches.

Bark—dark, deeply furrowed.

Leaves—long, divided into unequal halves by deep sinuses; upper half long and broad with scalloped or lobed margins; lower half, short, lobed, tapering to the stem.

Fruit—acorns, large and round, set deeply in scaly, mossy fringed cups.



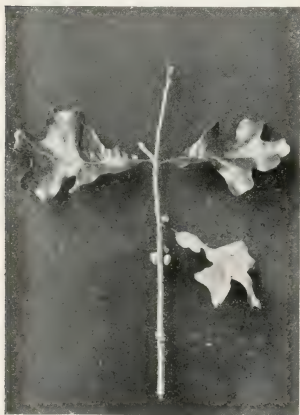
BUR OAK—*QUERCUS MACROCARPA*. HOPKINS CO., KY.

No. 1. *c. Post Oak—Quercus minor.*

The Post Oak is found all over the State, but is of commercial importance only west of the Blue Grass region.

The wood is used for posts, ties and cooperage or wherever durability is desired in contact with soil or water. Post Oak is an excellent park tree.

The foliage is a ready means of identification; the form of the normal leaf is almost cross-shaped.



Tree—medium height, with low twisted branches and close round top.

Bark—dark, deep furrows covered with scales.

Leaves—lower pair of five lobes small, middle pair broad and gently lobed, terminal lobe itself 3-lobed; texture of leaves thick, leathery, roughened by minute hairs.

Fruit—acorns, small, usually sessile in groups of 2 to 3.



POST OAK—*QUERCUS MINOR*. HOPKINS CO., KY.

No. 1. *d. Overcup Oak—Quercus lyrata.*

The Overcup or Swamp Post Oak is a native of low river bottoms and swamps, in the western part of the State. The wood is not differentiated from White Oak in the lumber markets.

The nut, almost enclosed by the scaly cup, gives the descriptive name to this species and is an easy guide to identification.

Tree—large, trunk dividing into several main branches.

Bark—reddish gray, shedding in thick scaly plates.

Leaves—3 to 5 pairs of oblong, pointed lobes with broad middle sinuses.

Fruit—acorns, small, rounded, often entirely enclosed by rough, scaly cups.

No. 1. *e. Chestnut Oak—Quercus prinus.*

The Chestnut Oak takes its name from the resemblance of its leaves to those of the Chestnut.

As the more tolerant Maple, Beech and Hemlock disappear in the ascent up steep ridges, Chestnut Oak increases. In the Cumberland River district, which is the second heaviest timbered region of Kentucky, Chestnut Oak forms one of the four abundant forest trees. It is also found on sterile dry situations in the central and western part of the State.

Neither the leaves nor the twigs are seriously damaged by insects and fungi, but the wood is discolored by the burrowing of minute larvæ during the process of seasoning. These black specks, filled with sawdust, enlarge, reducing the grade of timber in the markets. The largest and soundest logs are sold with White Oak and utilized for the same purposes. The Chestnut Oak, however, is seldom quarter-sawed because of its poor silver grain.

The bark is used extensively in the tanneries; it is this tannic extract that has named the tree Tanbark Oak.

Tree—large, usually divided into several main branches.

Bark—very dark, fissured in deep, rough ridges.

Leaves—resembling Chestnut without the pronounced toothed margin.

Fruit—acorns, single or in pairs; nuts more than half imbedded in round, scaly cups.

No. 1. *f. Chinquapin Oak—Quercus acuminata.*

The Chinquapin, or Narrow-leaved Chestnut Oak, grows along the rocky banks of streams in the mountains. It is also found abundantly on limestone ridges.

The wood, very strong and close-grained, is difficult to season, but is used for railroad ties, barrels and fencing.

Attractive in form and foliage, the Chinquapin deserves a prominent place in parks and on large lawns.

The tree is often called Yellow Chestnut Oak from the yellow green of its foliage.

Tree—tall, straight, with wide spreading base.

Bark—close, rough, separating into brown scales.

Leaves—long, narrow, taper-pointed, coarsely toothed, crowded together at ends of branches.

Fruit—acorns, small and sweet; nuts set one-half of their length, in fringed cups.



No. 1. *g.* Swamp White Oak—*Quercus platanoides*.

Swamp White Oak is found commercially in the moist situations of Western Kentucky.

In habit, it resembles White Oak; the wood also is similar, but of an inferior quality.

The two-toned surface of its leaves justifies the botanical name, *bicolor*.



Tree—tall, straight, with large trunk often buttressed at the base.

Bark—dark brown, shedding in sheets like Sycamore.

Leaves—broad, with narrow tip and base; yellow green above, pale, downy white, beneath.

Fruit—acorns on long, slender stems; oblong nuts deeply set in saucer-shaped cups, covered with thick, woolly scales.



SWAMP WHITE OAK—*QUERCUS PLATANOIDES*. HOPKINS CO., KY.

No. 1. *h. Basket Oak—Quercus michauxii.*

The Basket Oak, or Cow Oak, found abundantly in low grounds of Western Kentucky, ranks close to White Oak in quality and price. As the wood splits easily, it is especially valuable in the manufacture of baskets and crates. Owing to the sweetness and abundance of its acorn, Basket Oak ranks among the foremost mast trees of the Oak Family.

It is the handsomest of the Chestnut Leaved Oaks, deserving recognition as an ornamental park tree for wet situations.

Tree—undivided straight trunk, with large full crown.

Bark—separates into thin plates of pale gray color.

Leaves—broadly oblong, with narrow base and coarsely scalloped margins.

Fruit—acorns, sweet, edible; nuts deeply seated in saucer-shaped cups, with hairy fringed rims.



BASKET OAK—QUERCUS MICHAUXII. HOPKINS CO., KY.

NO. 2.—BLACK OAK GROUP.

Of the Black Oak group there are four species of great commercial importance in Kentucky:

- a.* Red Oak—*Quercus rubra*.
- b.* Black Oak—*Quercus velutina*.
- c.* Scarlet Oak—*Quercus coccinea*.
- d.* Texan Oak—*Quercus texana*.

Between the lumber of Red Oak and Black Oak there is little preference shown in the market, and between the trees, small basis for a close habit classification.

They are both found all over Kentucky in gravelly, clay soils of slopes and ridges.

The wood of each is heavy, hard and strong; more easily worked than White Oak, but inferior in quality where great strength or contact with the ground is required.

The bark of each is rich in tannic acid used for tanning leather.

Both have oblong leaves, more or less acute at the 3-toothed apex, and wedge-shaped at the base. The 7 to 9 irregularly toothed lobes are furnished with bristly points.

Two points of difference may be considered:

Red Oak—inner bark, red; acorns, large, bitter; nuts enclosed only at base in shallow scaly cups, often persistent after nuts have fallen.

Black Oak—inner bark, orange yellow; acorns, smaller; nuts enclosed to one-half their size in scaly cups.

No. 2. *c. Scarlet Oak—Quercus coccinea.*

The Scarlet Oak, found all over the State on high, dry ground, is strongly resistant to fire, and sprouts abundantly from stumps.

The wood is sold with second-grade Red Oak.

Its attractive form and brilliant autumn foliage give the Scarlet Oak great advantages as a park tree.

Tree—tall, lower branches wide spreading, head narrow.

Bark—red brown, with shallow fissures.

Leaves—general outline of the Red and Black Oak, but of a thinner texture and more deeply lobed.

Fruit—acorns, resembling those of Black Oak, with kernels of nuts white, instead of yellow.

No. 2. *d. Texan Oak—Quercus texana.*

The Texan Oak is the tallest of our Black Oak group. It grows in moist bottomlands of the western part of the State, especially along the lower Green River.

The valuable wood is priced with Red Oak and used for the same purposes.

It resembles Scarlet Oak in foliage and Red Oak in fruit.



TEXAN OAK—*QUERCUS TEXANA*. HOPKINS CO., KY.

No. 2. *c. Pin Oak—Quercus palustris.*

The Pin Oak is common in wet land all over the State.

The wood checks and warps seriously; and is used principally for shingles.

The Pin Oak is a rapid-growing Oak and easily transplanted; it is extensively used as a shade tree along driveways, on lawns and in parks.

The secondary branches are numerous, so small and fine that they probably warrant the common name, Pin Oak.

Tree—handsome pyramidal outline, with single unbroken shaft like Cypress.

Bark—dark gray, nearly smooth.

Leaves—borne on long stems; 5 to 9 oblong deeply-cut lobes, with sharp, bristly tipped teeth.

Fruit—acorns, small; nuts, striped, set in shallow, soucer-shaped cups.

No. 2. *j. Spanish Oak—Quercus digitata.*

The Spanish Oak is found on dry, gravelly or sandy soil, but most abundant in the southeastern part of the State, west of the mountains.

The wood, strong and coarse-grained, checks badly while seasoning, and is not prominent in the lumber markets.

The unique and varied shape of the foliage makes the Spanish Oak an attractive ornamental tree.

Leaves—oval in outline, drooping in habit and covered with down on the under surface; terminal lobe, elongated, so deeply and variously cut as to challenge any uniform description.

Fruit—acorns, long, slender; nuts set about one-fourth of length, in top-shaped, scaly cups.



PIN OAK—*QUERCUS PALUSTRIS*. HOPKINS CO., KY.

No. 2. *g.* Swamp Spanish Oak—*Quercus pagodaefolia*.

This Oak, similar to forms of the Spanish Oak, is found sparingly on swamp borders and along streams west of mountain regions.

The wood, hard, strong and tough, is valued highly for construction.

Tree—tall, with massive trunk and narrow head.

Bark—thick, covered with brown plate-like scales.

Leaves—5 to 11 lobes, with wide sinuses; dark green above, persistently woolly beneath.

Fruit—acorns on short stalks; nuts set about one-half of length in hairy-lined, top-shaped cups.

No. 2. *h.* Black Jack—*Quercus marilandica*.

The Black Jack; or Barren Oak is found on dry, barren ridges everywhere in Kentucky. The tree is of slow growth, checks badly in seasoning, and is used commercially only in the manufacture of charcoal.

Growing on the dryest, poorest soil with huckleberries and reindeer moss, this black-trunked, stunted tree can easily be identified by the peculiar shape of its thick leathery leaves. Pear-shaped in general outline, they vary in form from a broad tip without lobes, to one, three, or five-lobed with sharp bristly points.



SWAMP SPANISH OAK—*QUERCUS PAGODAEFOLIA*. HOPKINS CO., KY.

No. 2. *i. Shingle Oak—Quercus imbricaria.*

j. Willow Oak—Quercus phellos.

k. Laurel Oak—Quercus laurifolia.

These three Oaks are found scattered in moist situations of the Trade Water district of Western Kentucky.

The Shingle Oak receives its name from the manufacture of its wood into shingles.

The others are not prominent in the lumber markets, but their wood is used locally for wagon making and light construction work.

Owing to their rapid growth, wide spreading lower branches, and slender, glossy unlobed leaves, they deserve extensive planting as ornamental shade trees.

In Louisville, the Willow Oak in Central Park remains green far into the winter.

No. 2. *l. Water Oak—Quercus nigra.*

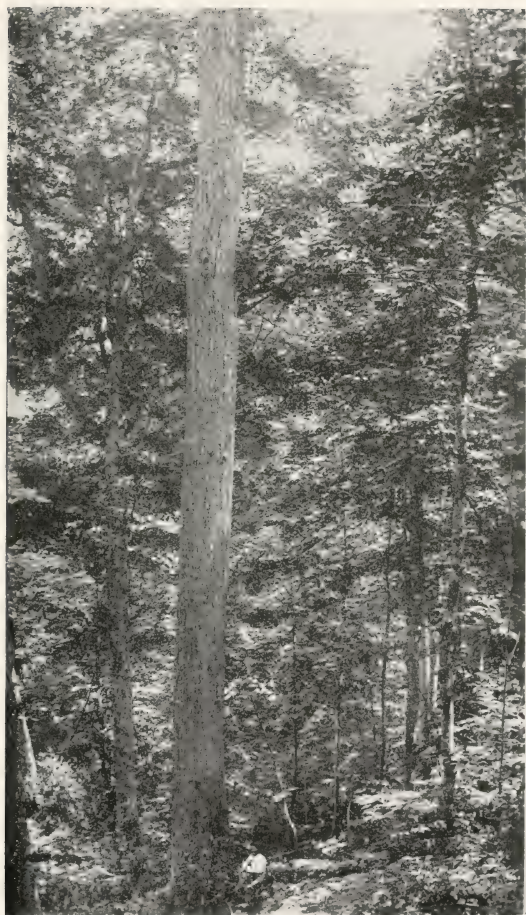
The Water Oak is found along borders of streams in the western part of the State.

The leaves resemble leaves of Black Jack in outline, but are smaller, of thinner texture and without the prominent bristly points.

No. 2. *m. Bear Oak—Quercus nana.*

The Bear Oak is a small, much branched shrub-like tree, forming close thickets on dry, sterile regions of the State.

The leaves are small, oval in outline, with 5 to 7 short triangular lobes strongly bristle-tipped, like Holly.



WATER OAK—*QUERCUS NIGRA*. HARLAN CO., KY.

ELM FAMILY—Ulmaceae.

This family contains two genera native to Kentucky:

- A. Genus *Ulmus*—Elms.
- B. Genus *Celtis*—Hackberries.

A. ELMS—GENUS *ULMUS*.

- a.* White Elm—*Ulmus americana*.
- b.* Slippery Elm—*Ulmus pubescens*.
- c.* Rock Elm—*Ulmus racemosa*.
- d.* Winged Elm—*Ulmus alata*.

a. White Elm—Ulmus americana.

The White or American Elm is among the largest of the hard wood trees found in mixed forests everywhere in the State. Forest grown, the trunk is often clear of branches for fifty feet. Grown in the open, the trunk divides near the base into three or four main branches, which rise with slight divergence, giving to the tree the form of an inverted cone.

The wood, strong, fibrous and difficult to split, is employed in interior finish and furniture, for hubs of wheels, agricultural implements and cheese boxes. It is fast becoming important lumber for slack cooperage.

The planting of Elm as a park tree has almost been discontinued because of the ravages of insects.

The flowers are perfect, inconspicuous, appearing before the leaves in early spring.

Tree—tall, graceful, typically vase-shaped.

Bark—dark gray, divided by deep fissures into scaly ridges.

Leaves—alternate, simple, coarsely toothed, unequal at base, slightly rough on upper surface.

Fruit—small, flat nutlets, with circular notched wings called samaras, ripening before the leaves appear.



b. Slippery Elm—Ulmus pubescens.

The Slippery Elm is most abundant in the rich river valleys of the State; but is often found on sterile cliffs and limestone ridges where it has great power of resisting drought.

Unlike most timber, the sapwood, when properly dried, is as durable as heart wood, so that very small trees can be used for fence posts. The wood is used for furniture, wheel hubs and most extensively employed in slack cooperage for staves and hoops.

The attractive outline, heavy foliage, and rapid growth of the Slippery Elm make it a desirable tree for roadside planting.

The mucilaginous inner bark, which gives the tree its common name, is sweet, fragrant, and of medicinal value.

Four points of difference between the Slippery and the White Elm are helpful in identification.

Slippery Elm:

1. *Tree*—smaller.
2. *Bark*—tinged with red.
3. *Leaves*—larger and rougher; buds hairy.
4. *Fruit*—larger, ripening when leaves are half grown

c. Rock Elm or Cork Elm—Ulmus racemosa.

The Rock Elm is a valuable timber tree found sparingly in the central and southern parts of the State.

The descriptive name has reference to the hardness of the wood, which in all essential qualities resembles White Elm. It is in demand for bridge construction, wheel stocks and agricultural implements.

The tree may be easily recognized by its shaggy, rugged appearance, due to the irregular, corky ridges on its branches.

The flowers and fruit in pendulous racemes mark this species, as *racemosa*.

Tree—large, with rugged, stiff branches.

Bark—gray, shaggy.

Leaves—small, elm-shaped.

Fruit—samaras, large and thick, winged all around, arranged in drooping racemes; seeds the size of apple seeds.

d. Winged Elm—Ulmus alata.

The Winged Elm, the smallest of this family, is common in the State west of the mountain region.

The timber is not commercially important, having only local uses.

Thin, corky wings that form on both sides of the young branches give the tree its descriptive name.

Tree—small, with round-topped head.

Bark—brown, tinged with red; corky ridges persistent on young branches.

Leaves—small, especially elm-shaped.

Fruit—smallest samaras of the Elm family.



B. HACKBERRIES—GENUS *CELTIS*.

a. Hackberry—*Celtis occidentalis*.

b. Sugarberry—*Celtis mississippiensis*.

a. *Hackberry—Celtis occidentalis.*

The Hackberry or Nettle Tree prefers limestone soil, but is found everywhere in Kentucky except in the higher mountains.

The wood, used moderately for cheap furniture, is classed with Hickory for fuel.

As a living tree, its ability to grow and to bear seed in sterile regions where other trees would die, make it of high economic value.

In habit it resembles the Elm, but a warty bark, purple berries and fungus growths called "witches broom" are unmistakable features for identification.

Flowers inconspicuous, of two kinds, staminate and pistillate on *same* tree.

Tree—tall, slender, round head with pendulous branches.

Bark—dark brown, covered with warty ridges.

Leaves—similar to Elm; longer, toothed at tip, entire at base, with 3 midribs instead of one.

Fruit—purple berries, sweet, edible, persistent all winter.

b. *Sugarberry—Celtis mississippiensis.*

The Sugarberry is found in low grounds in Western Kentucky. This tree is smaller than the Hackberry, its bark more thickly warted, and the margins of the narrow leaves are not toothed.

The berries are of an orange red color.

MULBERRY FAMILY—*Moraceae*..

Two genera of this family have tree forms in Kentucky:

A. Genus *Morus*—Mulberry.

B. Genus *Toxylon*—Osage Orange.

a. *Mulberry*—*Morus rubra*.

The Red Mulberry is one of the rapid-growing, fruit-bearing trees scattered through the State.

The wood is deep yellow, soft; durable in contact with the soil; used in cooperage and for fence posts.

The flowers are variable, sometimes perfect, often of two kinds, staminate and pistillate on the *same* tree.

Like the Sassafras, the leaf of the Mulberry varies in form, usually heart-shaped, often lobed.

Tree—medium size, trunk short with spreading branches.

Bark—yellow brown, separating into scales.

Leaves—alternate, simple, rough, variable in form.

Fruit—compound, sweet and juicy, resembling a blackberry.

b. Osage Orange—Toxylon pomiferum.

The Osage Orange grows on rich bottom lands and fertile hillsides, associated with Oaks, Elms and Hickories.

The wood, most distinctly orange-yellow, is used in the manufacture of machinery, insulator pins and wagon felloes.

The Osage Orange is extensively planted for wind-breaks; a hedge, when once established, is permanent.

The flowers are small, of *two* kinds, staminate and pistillate on *separate* trees.

Toxylon is an Indian word, signifying bow wood; formerly the wood was used for bows and other primitive weapons.

Tree—medium size, with short trunk; branches wide spreading, armed with short, axillary spines.

Bark—dark brown, an orange color in the furrows.

Leaves—alternate, simple, entire, taper-pointed, highly polished.

Fruit—compound, filled with milky juice; when ripe, resembling an orange in form and color.

MAGNOLIA FAMILY—Magnoliaceae.

Magnolias are represented in Kentucky by two genera:

A. Genus *Liriodendron*—Tulip Tree.

B. Genus *Magnolia*—Magnolias.

The distinguishing characteristics of these genera are:

1. Leaves—alternate, simple, large, entire.
2. Flowers—showy, perfect, solitary, often fragrant.
3. Fruit—a fleshy, cone-like structure filled with many seeds.

a. Tulip Tree—Liriodendron tulipifera.

Originally, the Tulip Tree was found abundantly in all parts of the State; for years Eastern Kentucky supplied the world's market; in Western Kentucky it rivaled the White Oak in size and number; it was abundant in the Trade Water district of Northwestern Kentucky and was prominent among forest trees in the southern part of the State. In the early part of the Nineteenth century, Michaux reported a pure forest of Tulip Trees from Bardstown to Louisville, with trees 22½ feet in circumference, three miles from Louisville. The great height, straightness and uniform diameter of its long clear trunk, easily place the Tulip Tree in the foremost rank of Kentucky's valuable commercial trees. These facts, together with its special property of floating easily, brought it into the lumber market soon after the Walnut, so that the Tulip Tree to-day is found only in limited quantities in accessible parts of the State. Government experts are of the opinion that old cuttings, if protected from fire, furnish ideal conditions for a second growth, and that old deformed unsound seed trees, left standing, offer excellent opportunity for establishing new forests by natural reproduction, if the seedlings are given sufficient light and protection from fire and grazing.

The wood, which is easily worked, is used for ship building, house construction, and is fast becoming prominent for exterior trimmings, cornices, porch posts and weather boarding. Curly growth is occasionally found, usually on one side of the tree, although Tulip Trees have recently been cut with the curl extending throughout the circumference. This curly wood brings a good price from veneer factories.

The Tulip Tree or "Yellow Poplar of the Ohio River," meets successfully the severe requirements of the vehicle manufacturers, both on account of the high quality of its wood and the valuable aid given by the action of the water in seasoning it while the logs are floated down the river.

In former days, the Indians made a choice of the Tulip wood for canoes because of its lightness; the early settlers made a drug from the bark with the tonic effect of Cinchona.



TULIP TREES. EARLINGTON, KY.

Fifteen years old, grown from seed.

For planting in parks and along roadsides, the Tulip Tree is of exceptional excellence. There is no season when this tree is not full of beauty and interest, both to the tree lover and the botanical student.

The Tulip Tree has three names in common usage:

1. Yellow Poplar—from its supposed similarity in appearance to trees of the Poplar family.
2. Saddle Tree—from the shape of the leaves.
3. Tulip Tree—from the resemblance of its flower to the garden Tulip, which it equals in size and shape. The flower is a bright greenish yellow with orange patches at base.

Tree—tall, 80 to 200 feet high; trunk large, continuous, tapering like a shaft; deeply furrowed with age.

Bark—close, thick, brown, aromatic.

Leaves—width and length nearly equal; shiny, leathery, with square tip.

Fruit—cone-like, with many flat-winged dry seeds attached to a central column.



FLEET OF TULIP OR "YELLOW POPLAR LOGS" ON OHIO RIVER.

After American Lumberman.

B. GENUS MAGNOLIA.

There are four species of the genus *Magnolia* native to Kentucky:

- a.* The Cucumber Tree—*Magnolia acuminata*.
- b.* The Umbrella Tree—*Magnolia tripetala*.
- c.* Ear-leaved Umbrella—*Magnolia fraseri*.
- d.* Large-leaved Umbrella—*Magnolia macrophylla*.

a. Cucumber Tree—Magnolia acuminata.



The Cucumber Tree is found in the ravines and coves of the mountain region mixed with Tulip Trees and Beech.

Commercially, this tree is used for many of the same purposes as the Tulip Tree and has the same value.

The trees of merchantable size have been cut in the most accessible places, but the stumps, if properly protected, will form a second forest.

The flower, though large, is inconspicuous, a yellowish green, resembling the color of the new leaves.

Tree—50 to 100 feet high; trunk, tall and straight.

Bark—thick, furrowed, covered with thin brown scales.

Leaves—oblong, 6 to 10 inches long, tip pointed.

Fruit—a fleshy, green cone resembling a cucumber; when ripe, the cone becomes red and hangs out scarlet, berry-like seeds on slender, elastic threads.

b. Umbrella Tree—Magnolia tripetala.



The Umbrella Tree is common in protected situations in the mountains of the State, where it is called Elkwood and Cucumber.

The flower is showy, cup-shaped, with a heavy disagreeable odor. It is surrounded by a whorl of large leaves like an umbrella; this suggests the name of the tree; the three small, recurved sepals at the base of the flower account for the botanical name, *tripetala*.

Tree—small, with leaning trunk and short distorted branches.

Bark—thin, light gray, covered with rough spots.

Leaves—whorled at the ends of the branches; 16 to 20 inches, tapering to the stem.

Fruit—smooth elongated cone, rose red at maturity.

c. Ear-leaved Magnolia—Magnolia fraseri.

A small tree, found sparingly only in the mountains. The flowers are fragrant, creamy white, spreading 8 to 10 inches across.

The ear-like lobes at the base of the leaves easily distinguish this tree from others of the family.

Tree—small, with inclining and wide-spreading branches.

Bark—thin, brown with warty patches.

Leaves—10 to 12 inches long; ear-like lobes at base; whorled at the end of branches.

Fruit—oblong cone, covered with horny tips, brilliant red at maturity.

d. Large-leaved Magnolia—Magnolia macrophylla.

A small tree restricted to the upper Cumberland region. It is credited with having the largest single leaf of any tree outside of the tropics.

The flower is also large, streaked, often extending a foot in diameter. It is formed of six thick, white leaves with a purple spot at the base of the inner three.

Tree—small, straight, slender.

Bark—thin, gray, covered with small scales.

Leaves—very large, 15 to 30 inches in length, pointed at tip, heart-shaped at base, scattered along the branches.

Fruit—rounded cone, turning red when ripe.

CUSTARD APPLE FAMILY—Anonaceae.

Pawpaw, genus *Asimina*, is the only representative in Kentucky of a large tropical family yielding spices, medicines and edible fruits.

Pawpaw—*Asimina triloba*.

Preferring the shade of taller trees, the Pawpaw frequently forms a close undergrowth in rich river valleys of the State.

The wood has no commercial value, but the tree is planted for ornament, because of its tropical fruit and interesting leaf arrangement.

The perfect flowers are small, resembling in color Wild Ginger and Calycanthus.

It is often called the "wild banana tree."

Tree—small and slender, with long tap root.

Bark—dark gray, with light colored blotches.

Leaves—alternate, simple, drooping at an unusual angle, pointed, 8 to 10 inches long, tapering to the base, clustered at ends of branches.

Fruit—3 to 5 inches long, yellow when ripe, containing brown flat seeds embedded in an edible pulp.

LAUREL FAMILY—Lauraceae.



The Sassafras is the only tree of this tropical family represented in Kentucky. The name Sassafras, given to both genus and species, is of Spanish origin.

Sassafras—Sassafras.

The Sassafras is common all over the State, taking possession with the Persimmon of cut-over woodlands.

The orange-brown wood is used locally for posts and fence rails. The aromatic bark and roots yield, by distillation, a volatile oil used in perfumery and for flavoring medicine. The variety of its leaf forms, brilliant autumnal coloring, and attractive dark blue berries make the Sassafras a valuable ornamental tree.

The green flowers are of two kinds, staminate and pistillate, borne generally on *separate* trees; they appear with the leaves.

Tree—flat-topped, irregularly branched, often making dense thickets.

Bark—thick, rough, streaked, especially in young trees.

Leaves—alternate, simple, oval, with three variations; margins entire; lobed on one side (mitten-shaped); lobed on both sides.

Fruit—dark blue berries, raised on bright red, club-shaped stems.

WITCH HAZEL FAMILY—Hamamelidaceae.

The family to which the Sweet Gum belongs claims a very ancient geological lineage. Two genera each with a single tree species represent this family in Kentucky:

- A. Genus *Liquidambar*—Sweet Gum.
- B. *Hamamelis*—Witch Hazel.

a. Sweet Gum—Liquidambar styraciflua.

The Sweet Gum is reported by United States Government foresters as the most important tree in Western Kentucky. Although it prefers low wet woodlands, it is found abundantly in the northern and central parts of the State and even in the mountain regions below 1500 feet.

In the forest, the tree grows from 50 to 100 feet with a straight, continuous shaft extending far into the short slender branches.



The wood is susceptible of a very fine finish. In foreign markets it is known as "Satin Walnut," while in our home trade it has received the name of "Red Gum."

The lumber is used in exterior trimmings, paving blocks, slack barrels and boxes. It is receiving increased recognition as a cabinet wood.

The tree gained its botanical name from the fragrant, resinous sap; according to an early Spanish explorer, the sub-tropical members of the family "exuded a gum-like liquidambar." Immunity from many fungus diseases common to other hard woods is largely due to the presence of this gum. It is also asserted that trees of very remote ancestry like Bald Cypress, Red Wood, Sycamore and Sweet Gum gain freedom from many diseases by the gradual elimination of weaker species.

The Sweet Gum deserves special recognition, not merely for its increasing commercial value, but for its exceptional beauty

as a shade tree. Ornamental at every season, it displays the greatest charms in the autumn when the star-like leaves turn from golden yellow to richest shades of red and purple.

The flowers of Sweet Gum are inconspicuous, growing in separate clusters on the same tree: staminate, in terminal, hairy racemes; pistillate, in single, long-stemmed balls, pendent from the axils of the leaves.

Tree—tall and cone-shaped, with one unbroken main shaft.

Bark—scaly on old trunks; young twigs blue gray, covered with wing-like, corky ridges.

Leaves—alternate, simple, long stemmed, star-shaped.

Fruit—many two-beaked seed cells, forming woody balls that swing from trees all winter.

b. Witch Hazel—Hamamelis virginiana.

The Witch Hazel found on the sides of deep ravines or rich mountain sides, is valuable for the medicinal properties of its bark, leaves and twigs.

The origin of the common name of the tree is doubtful; it may have been suggested by the use of the forked twigs of Hazel as a divining rod to indicate hidden springs of water. "Witch" is a modern spelling of the Saxon "wych," but in England "wych" was applied to an elm.

This tree has the unique habit of blooming in the autumn as its leaves fall. The flowers, with their small, ribbon-like, yellow petals, grow in clusters in the axis of the leaves. As the flowers fade, the fruit of a previous year ripens, the pods bursting with such explosive force that the small black seeds are hurled far away.

Tree—small, shrubby.

Bark—light brown, smooth or scaly.

Leaves—alternate, simple, unequal at base, strongly veined, margins wavy or toothed.

Fruit—two-celled, two-beaked, woody pods.

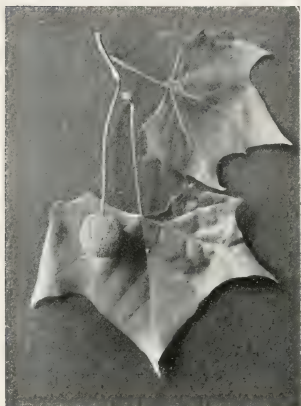


SWEET GUM OR RED GUM OF COMMERCE.

PLANT TREE FAMILY.—Platanaceae.

This ancient family is represented in Kentucky by one native genus *Platanus* with one species:

Sycamore—Platanus occidentalis.



The American Sycamore, or Buttonball Tree, is the largest tree of Eastern North America. In 1802, the botanist Michaux registered a Sycamore growing on the right bank of the Ohio River 47 feet in circumference, four feet from the ground. It is universally but sparingly distributed through the State, found principally in single file along the water ways.

The wood, hard, coarse-grained and brittle, is employed for cheap furniture, butchers'

blocks and tobacco boxes. The Sycamore suffers from a parasitic fungus which withers the young leaves in early spring; a second crop of leaves is afterwards successfully developed.

The generic name is derived from the Latin word *platus*, broad, referring to the shape of the leaves.

The tree is so conspicuously marked by its mottled trunk, snow white branches and brown pendent seed balls that identification is easy from long distances. Closer observation reveals two other interesting features:

1. The growing buds are concealed in the hollow base or pocket of the long leaf stems until autumn defoliation.
2. The young twigs are decorated with ruffled, leafy sheaths that encircle the stem above the leaf bud and persist far into the winter.



SYCAMORE. CHEROKEE PARK, LOUISVILLE, KY.

Forest grove; 18 feet in circumference.

Tree—towering, enormous trunk, often dividing near the ground into large secondary trunks; branches tortuous and heavy.

Bark—shedding in sheets, showing a grayish green, inner layer.

Leaves—alternate, simple, having 3 to 5 broad, long pointed lobes like Maple.

Fruit—solitary brown balls, persistent on long stems through the winter.

ROSE FAMILY—Rosaceae.

The tree forms of this family are classified in three genera:

- A. Genus *Prunus*—Wild Cherries and Plums.
- B. Genus *Amalanchier*—Service-berry.
- C. Genus *Crataegus*—Haws.

A. WILD CHERRIES—GENUS *PRUNUS*.

There are *two* species native in Kentucky:

- a.* Wild Black Cherry—*Prunus serotina*.
- b.* Wild Yellow Plum—*Prunus americana*.

a. Wild Black Cherry—Prunus serotina.

The Black or Cabinet Cherry is found scattered over the State, but because of its great commercial value much of the merchantable size has been cut.

The wood, when highly polished, competes with Mahogany and Rosewood for cabinet work, fine furniture and interior finish.

The bark yields an important drug and the fruit is gathered as flavoring for cordials and brandies.

The flowers are perfect, small and white, borne in pendent racemes three to four inches long.

Tree—large, with spreading drooping branches.

Bark—rough, peeling on old trunks, smooth, satiny, with white horizontal markings on new twigs; bitter.

Leaves—alternate, simple, finely toothed, narrow, tapering, bitter.

Fruit—berry with shiny, black skin and juicy, bitter pulp.

b. Wild Yellow Plum—Prunus americana.

The Wild Yellow or Red Plum is one of the stone-fruit trees common over the State.

Commercially, the strong, hard wood has not found a prominent place, but the tree has served the horticulturist as stock for many cultivated varieties.

As an ornamental tree, it is desirable for its attractive form and foliage, its profusion of pure, white, fragrant flowers and showy fruit. The wild fruit is locally used for jellies and preserves.

Tree—small, with spreading symmetrical top, numerous branches armed with sharp spurs.

Bark—dark gray, peeling in thin plates.

Leaves—alternate, simple, oval, toothed, taper pointed.

Fruit—bright red plum, with thick, tough skin, acid, juicy stone flattened on one edge.

Service Berry—Amalanchier canadensis.

The Service Berry is found on dry, hilly woodlands all over the State, but reaches its best development in the mountains.

The tree, known locally as June Berry, Shad or "Savice," is a most desirable park or lawn tree.

The wood, hard, strong and close-grained, is occasionally used for tool handles and small parts of machinery.

Early in spring, perfect white flowers in loose drooping clusters appear with the leaves.

Tree—small, with slender spreading branches.

Bark—purplish brown with shallow fissures.

Leaves—alternate, simple, thick, oval, toothed, sharp-pointed.

Fruit—sweet, red, juicy berries, covered with bloom when ripe.

C. HAWS—GENUS CRATAEGUS.

The Haws of Kentucky are of little commercial value in the lumber market.

They are usually spiny, much branched, small shrubby trees with beautiful flowers and highly decorative fruit. In ornamental hedges and borders, they deserve a prominent place.

Due to their habit of hybridizing, much accurate investigation will be necessary before a satisfactory report can be made of the different species and their distribution in Kentucky.

PEA FAMILY—Leguminosae,

The Leguminosae or Pea family is one of great size, wide distribution and economic importance. It includes all plants bearing a two-valved pod and is the only family whose members have the power of obtaining free nitrogen from the air to fertilize the soil. Five genera represent the pod-bearing trees in Kentucky:

- A. Genus *Robinia*—Locust.
- B. Genus *Gleditsia*—Honey Locust.
- C. Genus *Gymnocladus*—Kentucky Coffee Tree.
- D. Genus *Cladrastis*—Yellow Wood.
- E. Genus *Cercis*—Redbud.

They are characterized by

1. Leaves—alternate, pinnately compound, except in *Cercis*.
2. Flowers—in showy, pendent racemes.
3. Fruit—long, decorative pods.

Black Locust—Robinia pseudacacia.

The Black Locust, known also as Yellow Locust, is found generally throughout the State, although it attains its best development in limestone soil. As lumber in many of the industries is desirable from immature trees, and as Black Locust turns its sap wood quickly into heart wood, a plantation of these trees will bring a larger income on poor land, with less labor, than any other crop. Seeds may be sown even in the pod; they germinate the second year, and so rapid is the growth that, in ten years, small poles may be cut for vineyards and fence posts. In forty-five years the poles make superior railroad ties and telegraph poles because of the durability of the wood in contact with the soil. As the extensive root system sends up numerous sprouts and the trees plant and prune themselves, a plantation will bear a profitable annual harvest.

The wood is sold in the lumber market for tree-nails, ribs of vessels, insular shanks, vehicles and fuel.

Lumber men say that if Black Locust saplings are cut when the sap is full, the bark stripped immediately, and the poles dried rapidly, the wood is practically immune from ravages of the borer, which has damaged its reputation as a timber product.

The masses of perfect, pendent, fragrant white flowers, the delicate, silvery foliage drooping in cloudy weather or at the approach of evening, make the young Locust a highly ornamental tree.

Tree—tall, slender; trunk dividing near ground in the open; branches often contorted.

Bark—dark gray, deeply furrowed.

Leaves—8 to 14 inches long, leaflets small, sensitive to changes in temperature.

Fruit—pods 2 to 4 inches long, purplish, persistent all winter.

Honey Locust—Gleditsia triacanthos.

The Honey Locust is found abundantly in Kentucky west of the mountains, associated with Black Walnut, Hickory, Elm, Basswood and Ash. In the gravelly uplands of Central Kentucky, it is the dominant tree.

It serves its most valuable purpose as a living tree for hedges, shelter belts, and for restoring fertility to worn out and gully-washed land. The wood, durable in contact with the soil, is used for poles, fence posts and fuel. Unlike Black

Locust, it is not injured by borer and leaf miner.

While Black Locust has small prickles originating in the bark, Honey Locust has true thorns springing from the pith of the tree, recognized as undeveloped or abortive branches; these thorns, often set in clusters on trunk and branches, are generally three-pronged; this fact justifies the specific name, *triacanthos*.

The flowers are inconspicuous, of *two* kinds: staminate and pistillate on *same* tree.

Tree—in the forest reaching a large size; in the open, producing a short trunk and broad crown.

Bark—dark brown, rough, usually set with clusters of aggressive thorns.

Leaves—twice pinnately compound, 7 to 9 inches long, leaflets small.

Fruit—purplish, twisted pods, 6 to 18 inches long, containing a sweet pulp between seeds.

Kentucky Coffee Tree—Gymnocladus dioica.

The Coffee Tree, although one of the rarest of our hard wood trees, has few equals in the extent of its range. In Kentucky, it is found in the central and western parts of the State. This tree received its local name from Kentucky pioneers, who believed that in its seeds, they had found a substitute for coffee.

The wood, strong, soft and durable, is used for fences and in light construction work.

The tree is conspicuous for its stiff, dead looking branches, which remain bare in spring until other trees are in full leaf.

The ornamental form and unusual character of the leaves are features peculiar to the Coffee Tree and Honey Locust.

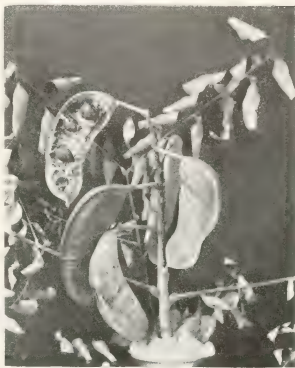
The flowers are inconspicuous, and of *two* kinds: staminate and pistillate, borne on *separate* trees.

Tree—tall, straight, with thick, thornless branches.

Bark—dark gray, deeply furrowed.

Leaves—twice pinnate, 1 to 3 feet long, sensitive.

Fruit—clumsy, thick-skinned pods containing a sweet pulp.



Yellow Wood—Cladrastis lutea.

The Yellow Wood, known as Gopher Wood or Virgilia, is rare and local. It is found, principally, along limestone cliffs of the Kentucky, Salt and Dick rivers, in Central Kentucky; the highlands of Western North Carolina and Eastern Tennessee.

The wood, bright yellow in color, hard and strong with a smooth, satiny surface, has great possibilities as decorative lumber. Not subject to special diseases, the tree reaches its greatest value as an ornament in parks and lawns. Yellow Wood is easily propagated both by seeds and root cuttings.

It seldom flowers abundantly two successive seasons, but when covered with bloom surpasses all other trees in beauty. The perfect flowers are large, white and fragrant, borne at the end of twigs, in pendent clusters nearly a foot long.

Tree—short trunk with well developed head of graceful, slender branches.

Bark—gray, smooth, like Beech, yielding a yellow dye.

Leaves—7 to 11 broad, oval leaflets, stems hollow at base like Sycamore, enclosing next year's buds.

Fruit—long, slender, pendent pods, containing from four to six dark, brown seeds.

Red Bud—Cercis canadensis.

The Red Bud is found leaning out from under the shade of taller trees along streams and rich hillsides throughout the State. The wood is weak, close-grained and susceptible of a beautiful polish when seasoned. The bark and young branches are used to dye wood a nankin color.

Its tolerance of shade, habit of rapid growth and early blooming earn for it a prominent place in park and border plantations.



The *perfect* flowers, which appear before the leaves, are arranged in pink purplish clusters along the dark gray branches and far down the trunk.

Tree—small, with flat head and smooth thornless branches.

Bark—red brown, furrowed closely.

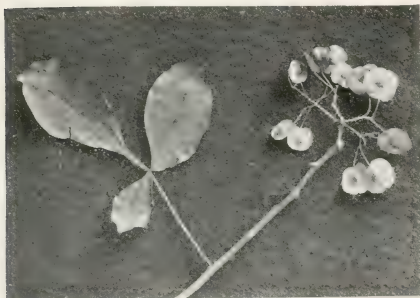
Leaves—simple, broadly heart-shaped.

Fruit—flat, smooth pods, green in summer, turning a lustrous purple; persistent far into winter.

RUE FAMILY—Rutaceae,

The Rue family, so prominent in sub-tropical regions for its oranges and lemons, is represented in Kentucky by one genus, *Ptelea*, containing one tree species.

Three-leaved Hop Tree—Ptelea trifoliata.



The Hop Tree or Wafer Ash is well distributed in the undergrowth of forests of the State. Formerly, it was abundant near Louisville on cliffs facing the Ohio River.

There are three reasons for its numerical success and wide distribution in the forests:

1. It is tolerant of the shade of taller trees.
2. The leaves, bark and seeds are so bitter that animals never feed upon them.
3. The seeds are abundant, vigorous and well equipped with wings adapted to long flight.

In a border plantation, the light green foliage and buff colored persistent fruit are highly ornamental.

The inconspicuous flowers, appearing early in spring, are of two kinds: staminate and pistillate, borne in the *same* clusters.

Tree—small, often shrub-like.

Bark—smooth, dark gray.

Leaves—alternate, tri-foliolate on long stems, leaflets sessile.

Fruit—samaras, surrounded by broad, wafer-like wings; persistent far into winter.

HOLLY FAMILY—Aquifoliaceae.

The Holly family is represented in Kentucky by one genus, *Ilex*, comprising three wild arborescent species:

- a. American Holly—*Ilex opaca*.
- b. Mountain Holly—*Ilex montana*.
- c. Deciduous Holly—*Ilex decidua*.

a. American Holly—Ilex opaca.



The American or White Holly is a small tree found sparingly all over the State.

The wood, which imitates ivory in color and texture, is highly prized in cabinet work, interior finish, furniture and turnery.

A pyramidal form, evergreen foliage and persistent bright red berries make the Holly most desirable for lawns and ornamental hedges.

The flowers, small, white and clustered, are of two kinds, on different trees.

Tree—small, cone-shaped, evergreen; branches short, horizontal.

Bark—gray, usually covered with lichens.

Leaves—alternate, simple, evergreen, leathery; margins wavy with sharp stiff spines.

Fruit—bright red berries, persistent all winter.

b. Mountain Holly—Ilex montana.

The Mountain Holly, faithful to its name, is restricted to mountain regions of the State. It differs from other Hollies in having large, thin leaves, which resemble leaves of the Plum Tree.

The fruit is a bright scarlet berry, often as large as a cherry.

As both fruit and leaves are deciduous, this tree is not popular for ornamental planting.

c. Deciduous Holly—Ilex decidua.



This Holly is a small tree, or shrub, found in wet meadows or along borders of streams, in company with Red-bud, shrubby Dogwoods and Buttonball bush. Thick deciduous leaves are usually clustered at the ends of small branches.

In cultivation, it forms an attractive feature for winter effects, as the absence of leaves only emphasizes the persistent clusters of brilliant red berries arranged abundantly along the branches.

MAPLE FAMILY—Aceraceae.

Two strong, constant characteristics mark the Maple family:

1. Leaves—opposite, simple, except in Boxelder.
2. Fruit—a pair of winged seeds called a key, or samara.

One genus, *Acer*, represents the family; in Kentucky, there are seven species:

- a.* Sugar Maple—*Acer saccharum*.
- b.* Black Maple—*Acer nigrum*.
- c.* Silver Maple—*Acer saccharinum*.
- d.* Red Maple—*Acer rubrum*.
- e.* Mountain Maple—*Acer spicatum*.
- f.* Striped Maple—*Acer pennsylvanicum*.
- g.* Boxelder—*Acer negundo*.

a. Sugar Maple—*Acer saccharum*.

The Sugar, or Rock Maple, is one of the large abundant forest trees found widely distributed throughout the State.

The wood is used for flooring, interior finish and cabinet work. Highly-prized fancy grains, known as Curly and Bird's Eye Maple, are abnormal growths of the wood; Curly Maple is due to a twist in the fiber; Bird's Eye, to accidental development of dormant buds; both receive special methods of cutting to increase their beauty.

The living tree, with its vigorous health, luxuriant foliage and brilliant autumn coloring ranks in the first class for park and street planting. The sap yields sugar and syrup of economic value.

The greenish yellow flowers on hairy, thread-like stems are variable, either perfect, or staminate and pistillate in *separate* clusters on *same* or *different* trees. They appear *with* the leaves.

Tree—large, with full dome-like crown.

Bark—gray, deeply fissured, scaly.

Leaves—broad, 3 to 5 lobed, each lobe with 3 to 5 acute points, veining noticeable.

Fruit—keys, with broad wings slightly divergent.

b. Black Maple—*Acer nigrum*.

At one time Black Maple was considered a variety of Sugar Maple; it now has the rank of a distinct species. It is found sparingly in hard wood forests of Kentucky.

The wood has the same character and uses as Sugar Maple.

Tree—large, compact.

Bark—dark gray, with stout, orange-colored twigs.

Leaves—large, dark green, shallow lobes, smooth margins, drooping habit.

Fruit—keys, with wings widely divergent.

c. Silver Maple—Acer saccharinum.

The Silver Maple is found along many streams of the State.

The wood, light and brittle, is used for interior work, furniture, flooring and excelsior.

Tree is a rapid grower, but the brittle branches, easily broken by the wind, are attacked by destructive insects and fungi. For street planting, longer lived trees should be alternated with Silver Maple.

The greenish yellow flowers are of two kinds; staminate and pistillate on *different branches* or on *separate* trees. They appear *before* the leaves.

Tree—large trunk, with long, slender, spreading branches.

Bark—dark, with plate-like scales.

Leaves—deeply five-cleft, with silver lining.

Fruit—keys with broad, widely divergent wings.

d. Red Maple—Acer rubrum.

The Red Maple is common over the State. The wood is valuable for gun stocks, oars, tool handles and fuel. Logs of Curly and Bird's Eye Red Maple are of great value for cabinet work.

A beautiful form, brilliant coloring and sturdy growth make Red Maple a desirable ornamental tree for park, lawn and street.

The flowers are of two kinds: staminate orange, pistillate red, on the *same* or *different* trees; they appear *before* the leaves.

Tree—slender, well formed, with erect branches.

Bark—gray, scaly; branches pale, smooth; twigs red.

Leaves—variable, generally 3-lobed, margins cut-toothed, stems long, slender, red.

Fruit—keys, with thin divergent wings, pendent on long slender red stems.

c. Mountain Maple—Acer spicatum.

The Mountain Maple is found under the shade of taller trees in mountain regions. The tree is too small to be of commercial value, but its beauty in autumn justifies its place in parks and lawns.

Flowers on upright racemes; staminate at tip, pistillate at base of raceme; flower stalk hairy.

Tree—small, bushy.

Bark—brown, branches reddish gray.

Leaves—lobes taper-pointed and toothed, lined with down, drooping.

Fruit—small keys borne in a pendulous cluster.

f. Striped Maple—Acer pennsylvanicum.

The Striped Maple, sometimes called Moosewood, makes its best growth under the shade of taller trees along mountain sides of Kentucky. Its leaves are large, three-lobed, finely toothed, drooping quickly when picked.

The fruit hangs in loose, pendulous clusters; the wings of the samaras are widely divergent.

The thin, green bark, splitting longitudinally as the trunk increases in diameter, displays a light lining, which gives the tree a characteristic striped effect.

This Maple, if planted in shaded situations, grows well in cultivation, and adds great beauty to the scenery, especially in early spring.

g. Boxelder—Acer negundo.

The Boxelder, or Ash-leaved Maple, is found in small numbers associated with Elm, Hackberry, Green Ash and Walnut west of the mountains.

It is utilized for small patterns and models, cheap furniture, and paper pulp. On streets and lawns, Boxelder is valuable as a rapid-growing tree, alternating with more permanent and valuable varieties.

The green drooping flowers are of two kinds; staminate and pistillate on *separate* trees. They appear *with* the leaves.

Tree—small, divided near the ground into stout, wide-spreading branches.

Bark—gray, with broad, deep ridges.

Leaves—compound of three to five leaflets, middle leaflet three-lobed.

Fruit—keys, borne in drooping clusters, persistent far into winter.

BUCKEYE FAMILY—*Aesculaceae*.

One genus, *Aesculus*, comprising two species, represents this family commercially in Kentucky:

a. Ohio Buckeye—*Aesculus glabra*.

b. Yellow Buckeye—*Aesculus octandra*.

a. Ohio Buckeye—*Aesculus glabra*.



This tree is found in Kentucky along the banks of mountain streams. It is called Fetid Buckeye from the unpleasant odor of its bark, and is also known as American Horse Chestnut.

The wood, soft, white and light, is used for interior trimmings, woodenware and paper pulp. It is also employed largely in the manufacture of artificial limbs.

The name, Buckeye, is due to the fancy of early settlers, who saw in markings of the nut some resemblance to the eye of the deer. The local name, Ohio, was given to the tree by the younger Michaux, who reported the most abundant growth along the Ohio River.

The pale yellow flowers are *perfect*, growing in large erect panicles at ends of branches.

Tree—tall, with slender, opposite branches and large, pointed terminal buds.

Bark—gray, deeply channelled, broken into plates; fetid.

Leaves—opposite, palmately compound, consisting of five to seven slender leaflets.

Fruit—three-leaved spiny husks, containing large, shiny, brown, bitter nuts, each conspicuously marked with a round pale scar.



YELLOW BUCKEYE.

b. Yellow Buckeye—Aesculus octandra.

The Yellow, Sweet, or Big Buckeye is a tall, handsome tree found on lower mountain slopes mixed with hard woods.

The wood, often called Whitewood, is similar to Ohio Buckeye, and used for the same purposes.

The fruit, about two inches long, has a smooth husk, containing one or more red brown nuts, with the polish of old mahogany.

This tree grows rapidly and is a handsome ornament in park and lawn.

Tree—tallest of this family, often reaching a height of 80 feet.

Bark—thick, brown and scaly.

Leaves—opposite, palmately compound; five to seven oval or elliptical leaflets.

Fruit—smooth, thick husks, containing one or more large, well-marked nuts.

BUCKTHORN FAMILY—Rhamnaceae.

This widely distributed family is of considerable economic importance, because of its contributions to medicine. In Kentucky, it is represented by one genus, *Rhamnus*, with one species.

Yellow Buckthorn—Rhamnus caroliniana.

The Yellow Buckthorn, often called Indian Cherry, grows as scattered undergrowth in rich bottom lands and on limestone slopes bordering streams. It was at one time found in company with the Hop Tree, along old bluffs of the Ohio River, near Louisville.

Its bright, green foliage and attractive berries make it an ornamental plant for large shrubby borders.

The small, *perfect*, greenish white flowers are borne in clusters in the axils of the leaves.

Tree—small, slender, with spreading top.

Bark—dark gray, often spotted with black.

Leaves—simple, alternate, elliptical, 2 to 6 inches long, slightly serrate.

Fruit—berry-like, black and sweet when ripe in early autumn.

LINDEN FAMILY—Tiliaceae.

This tropical family is represented in North America by a single genus, *Tilia*.

GENUS *TILIA*—LINDENS.

In Kentucky, there are two species known as "Linn," or Basswood, distinguished only by experts.

a. American Linden—Tilia americana.

b. White Basswood—Tilia heterophylla.

These trees, common through the State, are most abundant in mountain regions. They are cut for floating timber and sold with Tulip Tree and Cucumber as soft wood. The lumber, known as Whitewood, is used for interior finish, carriage bodies, organ pipes and wood carving. In the South it is largely employed in the manufacture of excelsior.

The flowers, small, *perfect*, and rich in nectar, are borne in pendent clusters attached by a long stalk to a narrow, leaf-like blade.

The tree takes its common name, Basswood, from the tough, fibrous character of the inner bark or bast. No other native tree sprouts more vigorously from cut-over stumps nor has more luxuriant foliage.

Tree—tall, with many smooth, symmetrical, upright branches.

Bark—dark, deeply and closely furrowed.

Leaves—alternate, simple, toothed, large, obliquely heart-shaped.

Fruit—a cluster of woody, pea-like balls, pendent from an elliptical, leafy structure.

GINSENG FAMILY—*Araliaceæ*.

This family, composed chiefly of vines, herbs and shrubs, has become prominent through two of its members, English Ivy and Ginseng of commerce.

One genus, *Aralia*, comprises the only tree species growing wild in Kentucky.

Hercules' Club—Aralia spinosa.

Hercules Club, sometimes called Angelica Tree, is a small, slightly spreading tree, having its trunk thickly set with sharp, stout prickles.

The graceful, palm-like leaves, borne at the summit of the branches, are the largest produced by any tree of this region. Like the Kentucky Coffee Tree, they are twice pinnate; the oval leaflets on their spiny stems are of moderate size and are often mistaken for the whole leaf.

Perfect flowers, appearing late in July, are arranged in large, terminal panicles high above the leaves; dark purple fruit, ripening in September, persists in drooping clusters all winter.

Rapid growth, tropical foliage, persistent, showy fruit and a prickly, club-like trunk make this tree horticulturally popular.

DOGWOOD FAMILY—*Cornaceae*.

In North America this family has but two genera of tree habit:

- A. Genus *Nyssa*—Gums.
- B. Genus *Cornus*—Dogwoods.

A. GUMS—GENUS *NYSSA*.

There are two species native to Kentucky:

- a.* Tupelo Gum—*Nyssa aquatica*.
- b.* Black Gum—*Nyssa sylvatica*.

a. Tupelo Gum—Nyssa aquatica.

The Cotton Gum, or Tupelo Gum, is found in swamp lands of the western part of the State, associated with Cypress, Sweet Gum and Swamp White Oak.

Due probably to its geological lineage, and the ancient habits of its race, the living tree is practically free from natural defects.

The wood is close-grained, white in color, with often a trace of yellow. It is a satisfactory wood for planing, because it is free from grit, but, owing to the irregular character of the woody fiber, great difficulty is found in splitting it. The twisted grain of Tupelo Gum makes it a superior wood for heavy grade flooring in warehouses, factories, skating rinks and interior car works. Although a new product of American trade, it is being extensively used for interior finish, mouldings and laths, for wooden conduits and pump stock. In this country and in foreign markets, it is sold as "Bay Poplar."

Flowers are of two kinds: staminate in dense clusters, pistillate solitary.

Tree—a typical swamp variety, with tall, large, unbroken trunk, short, horizontal branches and broad base.

Bark—rough, dark gray; young twigs downy.

Leaves—alternate, simple, sharp-pointed, covered in early spring with cottony down.

Fruit—berry-like, large, deep purple on slender drooping stems.



TUPELO GUM AND BALD CYPRESS.

b. Black Gum—Nyssa sylvatica.

The Black Gum is found scattered among other hard woods all over the State.

The wood is heavy, tough, cross-grained, and hard to work. It is used for pulleys, ox-yokes and hubs.

The brilliant, autumn foliage of the Black Gum, or Tupelo, makes the tree a handsome ornament for parks and lawns.

Tupelo is an Indian word; *Nyssa* is the name of a water nymph, applied by Linnaeus to these trees because of their aquatic habit.

The flowers, appearing from April to June, are of two kinds on slender hairy stems; staminate in thick clusters, pistillate usually in clusters of three.

Tree—medium size; main trunk continuous; branches short, rigid, drooping.

Bark—deeply furrowed, scaly.

Leaves—alternate, simple, blunt at the tip, glossy.

Fruit—berry-like, small, acid, blue.

B. DOGWOOD—GENUS CORNUS.

a. *Flowering Dogwood*—*Cornus florida*.

The flowering dogwood is a small, flat-topped tree found under the shade of taller trees, especially on rich hillsides.

The white wood is exceedingly hard and tough; this fact gave to the genus the name *Cornus*, a horn. It is used for hubs, tool handles and wood engraving. Large quantities are exported to Europe for the manufacture of shuttle blocks. The bark yields a red dye, and a drug with the properties of quinine.



With its highly decorative flower, foliage and fruit, the Dogwood is easily in the foremost rank as an ornamental tree.

The small green *perfect* flowers, arranged in a dense cluster, are surrounded by four large, white petal-like leaves notched at the tip; these showy white leaves are the expanded winter envelope of the flower bud.

Tree—small, bushy, with short trunk and slender branches.

Bark—dark gray, checkered like alligator skin.

Leaves—opposite and simple; veins parallel, curving upward.

Fruit—scarlet, waxy berries, in clusters of 3 or 4.

HEATH FAMILY—Ericaceae.

The Heath family, immortalized by the Scotch heather, is distributed from arctic to tropical regions. In Kentucky, it is represented by two genera, each containing a tree species:

A. Genus Rhododendron.

B. Genus Oxydendron.

a. *Great Laurel*—*Rhododendron maximum*.

In the mountains of the State, especially in caves and along small streams of the sandstone regions, Rhododendron forms dense, evergreen thickets. Evergreen leaves are usually needle-like, but Holly and Rhododendron represent two of the broad leaf type.

The large, *perfect* flowers are profusely set in showy, pinkish white clusters among whorls of fresh, new leaves.

Rhododendron and its relative, shrubby Kalmia, are unsurpassed as ornamental evergreens.

Tree—small, bushy, with bent or twisted trunk and stout, crooked branches.

Bark—thick, covered with reddish brown scales.

Leaves—oblong, thick and leathery, dark, glossy green, remaining on the branches for two or three years.

Fruit—oblong, woody capsules, containing many fringed seeds.



RHODOENDRON THICKET.

b. Sourwood—Oxydendron arborescens.



Sourwood, Sorrel Tree, or Lily of the Valley Tree, is common in the State, but found most abundantly in the mountains.

As an ornamental tree, it is highly prized for its long racemes of white, bell-shaped flowers, its vivid autumn foliage and persistent, small, dry capsules.

The small, *perfect* flowers, blossoming from May to July, are in pendent racemes at the ends of branches.

The acid in the leaves and twigs is responsible for its descriptive name.

Tree—small, irregular oblong top and slender branches.

Bark—thick, red gray.

Leaves—alternate, deciduous, oblong, tapering at base.

Fruit—small, dry capsules, borne on curved stalks.

EBONY FAMILY--Ebenaceae.

This tropical family is represented in America by one genus, *Diospyrus*, with one species:

a. Persimmon—Diospyrus virginiana.

The Persimmon, or Date Plum, is found in most woodlands all over the State. It is often called "Possumwood."

The heart wood of Persimmon is hard and black, but is not formed until the tree reaches an advanced age. The wood is used for interior finish and for piano frames, and is largely exported to Europe for this purpose. The less important uses are shoe lasts, plane stocks and tool handles.

The flowers are small, of *two* kinds, staminate and pistillate, borne on *different* trees; staminate in clusters, pistillate usually solitary.

Tree—tall, slender, with full round head.

Bark—dark brown, broken into irregular ridges showing an orange colored, inner layer.

Leaves—alternate, simple, pointed, thick and leathery.

Fruit—large, round, pulpy berries, edible when ripe.

STORAX FAMILY—*Styracaceae*.

One genus, *Mohrodendron*, with one tree species represents this family in Kentucky.

a. Silver-bell Tree—Mohrodendron carolinum.



This ornamental tree is known in different Southern States as Snow-drop Tree, Wild Olive Tree, Bell Tree, Opossum Wood, and Tisswood. It is found along mountain slopes with Mag-

nolia, *Rhododendron*, *Sourwood* and *Witch Hazel*.

Early in the spring, before the leaves are developed, the branches are decorated with large, graceful, bell-like flowers in lateral clusters of 2 to 4. The flowering period lasts from two to four weeks and places this tree in the list with *Dogwood*, *Red-bud* and *Flowering Crab* for landscape effects.

Tree—generally small, with short, stout branches.

Bark—brown, with scaly furrows.

Leaves—simple, alternate, oblong, 2 to 4 inches long.

Fruit—4-winged, pendulous nutlets, persistent far into the winter.

OLIVE FAMILY—Oleaceae,

Two genera represent this family in Kentucky:

A. Genus *Fraxinus*—Ash.

B. Genus *Chionanthus*—Fringe Tree.

A. ASH—GENUS *FRAXINUS*.

Three characteristics readily identify these trees:

1. Branches—opposite.
2. Leaves—compound.
3. Fruit—a key or samara with *one* wing.

Five species of Ash are found in Kentucky forests:

- a.* White Ash—*Fraxinus americana*.
- b.* Red Ash—*Fraxinus pennsylvanica*.
- c.* Green Ash—*Fraxinus lanceolata*.
- d.* Blue Ash—*Fraxinus quadrangulata*.
- e.* Black Ash—*Fraxinus nigra*.

a. White Ash—Fraxinus americana.

The White Ash reaches its best development in rich bottom-lands of river valleys, but is distributed throughout the State in association with other hard woods. Because White Ash floated easily and brought a good price, the commercial supply of Kentucky is now limited; but the tree is a prolific seeder, sprouts abundantly from stumps and grows with fair rapidity.

The strong, elastic wood seasons without injury and takes a fine polish; these qualities place it in the first rank for interior finishings, furniture, car and carriage building, and agricultural implements. Ordinarily, curly growth in Ash is on one side of the tree, though trees have been found with the entire circumference figured; these figures run crosswise of the tree, resembling bird's eye in Maple. Curly Ash commands the highest price as fancy grain and is exported to foreign countries principally for inlaid work. White Ash has great value as a shade tree.

The flowers are usually of two kinds, staminate and pistillate, in loose panicles on *separate* trees; sometimes both kinds in *same* cluster.

Tree—large trunk, with broad, round, graceful head.

Bark—gray, closely furrowed; new shoots smooth, olive green.

Leaves—5 to 9 leaflets, stalked, sharp-pointed, with pale under surface.

Fruit—keys in loose pendent clusters; each key with a long slender wing like a paddle.

b. Red Ash—Fraxinus pennsylvanicum.

In habit, Red Ash is similar to White Ash, though a much smaller tree. It is found all over the State outside of the mountain region, but most abundantly in the western part.

The wood, inferior to White Ash, is used as second-class material for many of the same purposes. The tree grows rapidly and is well adapted for street and lawn planting.

For identification, Red Ash has

1. Twigs—hairy or velvety.
2. Leaves—5 to 9 leaflets, with hairy stems.
3. Fruit—keys, with spatulate-shaped wings notched at the tip.

c. Green Ash—Fraxinus lanceolata.

Green Ash is a small tree common in the Blue Grass region extending to the western part of the State.

The wood is inferior to White Ash and is used for similar purposes. It is recommended for street and park planting.

The foliage of Green Ash is smooth and of such uniform dark, lustrous green that it gives the tree its distinctive name and is the easiest means of identification.

d. Blue Ash—Fraxinus quadrangulata.

Blue Ash is found sparingly in the State, preferring limestone regions. Although less abundant in the markets than White Ash, the wood ranks as same grade of lumber.

An easy mark for identification is the square or four-angled twigs which suggested the specific name, *quadrangulata*; the common name, Blue, was given from a dye in the bark.

Unlike the other members of this family, Blue Ash has *perfect* flowers, borne in loose clusters, appearing before the leaves.

Tree—the most slender of the family.

Bark—light gray, splitting into scales; branches conspicuously four-angled.

Leaves—7 to 11 leaflets, pale and hairy beneath.

Fruit—keys, with flat seeds entirely enveloped by long blunt wing.

c. Black Ash—Fraxinus nigra.

The Black Ash is the water-loving member of the family and is found principally in swampy lands in western part of the State.

The wood is used for fence posts and in basket making.

Three strong characteristics are a guide to identification:

1. Buds—bluish black.
2. Leaves—7 to 11 leaflets without stems, except the terminal one.
3. Flowers—*defective*, wanting two of their floral parts, sepals and petals.

Fringe Tree—Chionanthos virginica.

This very attractive tree has received many names: Old Man's Beard, Snow-flower Tree, Flowering Ash and White Fringe, all alluding to the beauty of its flowers.

The generic name, Chinonanthos, well describes the bloom, Chion—snow, anthos—flower. In June, as the leaves unfold, the delicate, fragrant flowers appear in slender, drooping panicles, This flowering habit, together with its handsome foliage, have given the tree a favorite place in gardens of Eastern United States. In Europe, it is highly prized as an American exotic.

Tree—trunk short, often shrub-like.

Bark—brown, fissured.

Leaves—simple, alternate, oblong, taper-pointed at each end,
bright yellow in autumn.

Fruit—borne in clusters, dark blue with slight bloom.

CATALPA FAMILY—Bignoniaceae.

In Kentucky, this tropical family is represented by one genus *Catalpa* with two species:

a. Catalpa—Catalpa speciosa.

b. Catalpa—Catalpa bignonioides.

a. Western Catalpa—Catalpa speciosa.

Catalpa speciosa is reported in Ohio River bottoms in Western Kentucky, below the mouth of Wabash River.

The strong, elastic wood has a beautiful grain and is susceptible of a fine polish for furniture and interior trimmings. A tall, straight trunk, rapid growth and extreme durability in contact with the soil make this *Catalpa* peculiarly suitable for mine timbers, telegraph poles and railroad ties; for commercial uses, large tracts have been planted with these trees in different parts of the country and several plantations have been started in Kentucky. *Catalpa speciosa* is also much prized as a shade and ornamental park tree, because of its dark, tropical foliage and large panicles of showy, *perfect*, white flowers.

Catalpa is an Indian word given to these trees by the Cherokee Indians.

Tree—tall, upright trunk with short, stiff, dead-looking branches.

Bark—brown, breaking into thin scales.

Leaves—simple, opposite or in whorls, large, heart-shaped, thick and firm.

Fruit—slender, bean-like capsules, 10 to 20 inches long, filled with flat, winged seeds; wings frayed at edges into many soft threads.

b. Catalpa—Catalpa bignonioides.

This Catalpa, or Indian Bean, as it is sometimes called, is found common in low river bottoms of the State.

The wood, durable in contact with water and soil, is much inferior to *Catalpa speciosa*; it is used locally for fence posts.

This Catalpa is also a favorite ornamental tree, taking rank with Horse Chestnut and Paulownia.

These two Catalpas are distinguished one from another only by the expert, but *four* points of difference are guides to identification.

Catalpa bignonioides has :

1. Short, thick, low-branching trunk;
2. Later flowering period;
3. Smaller flowers and pods;
4. Seeds smaller with wings, either twisted at the ends, or drawn out to a point.

List of Trees Native to Kentucky

1. Short-leaf Pine.
2. White Pine.
3. Pitch Pine.
4. Scrub Pine.
5. Hemlock.
6. Bald Cypress.
7. Red Cedar.
8. Cottonwood.
9. Swamp Cottonwood.
10. Large-toothed Aspen.
11. Black Willow.
12. Long-leaf Willow.
13. Glaucous Willow.
14. Black Walnut.
15. Butternut.
16. Shagbark Hickory.
17. Kingnut.
18. Black Hickory.
19. Mockernut.
20. Pecan.
21. Bitternut.
22. Hornbeam.
23. Hop Hornbeam.
24. Water Birch.
25. Yellow Birch.
26. Sweet Birch.
27. American Beech.
28. Chestnut.
29. Chinquapin.
30. White Oak.
31. Bur Oak.
32. Post Oak.
33. Overcup Oak.
34. Chestnut Oak.
35. Chinquapin Oak.
36. Swamp White Oak.
37. Basket Oak.
38. Red Oak.
39. Black Oak.
40. Scarlet Oak.
41. Texan Oak.
42. Pin Oak.
43. Spanish Oak.
44. Swamp Spanish Oak.
45. Black Jack.
46. Shingle Oak.
47. Willow Oak.
48. Bear Oak.
49. Water Oak.
50. Laurel Oak.
51. White Elm.
52. Slippery Elm.
53. Rock Elm.
54. Winged Elm.
55. Hackberry.
56. Sugarberry.
57. Red Mulberry.
58. Osage Orange.
59. Tulip Tree.
60. Cucumber Tree.
61. Umbrella Tree.
62. Ear-leaved Umbrella.
63. Large-leaved Umbrella.
64. Pawpaw.
65. Sassafras.
66. Sweet Gum.

LIST OF TREES NATIVE TO KENTUCKY—Con'd

- | | |
|----------------------------|------------------------------------|
| 67. Witch Hazel. | 90. Striped Maple. |
| 68. Sycamore. | 91. Boxelder. |
| 69. Black Cherry. | 92. Ohio Buckeye. |
| 70. Wild Plum. | 93. Yellow Buckeye. |
| 71. Service Berry. | 94. Indian Cherry. |
| 72. Cockspur Thorn. | 95. American Linden. |
| 73. Scarlet Haw. | 96. White Basswood. |
| 74. Pear Haw. | 97. Hercules' Club. |
| 75. Washington Haw. | 98. Tupelo Gum. |
| 76. Black Locust. | 99. Black Gum. |
| 77. Honey Locust. | 100. Flowering Dogwood. |
| 78. Kentucky Coffee Tree. | 101. Rhododendron. |
| 79. Yellow Wood. | 102. Sourwood. |
| 80. Redbud. | 103. Persimmon. |
| 81. Three-leaved Hop Tree. | 104. Silverbell Tree. |
| 82. American Holly. | 105. White Ash. |
| 83. Mountain Holly. | 106. Red Ash. |
| 84. Deciduous Holly. | 107. Green Ash. |
| 85. Sugar Maple. | 108. Blue Ash. |
| 86. Black Maple. | 109. Black Ash. |
| 87. Silver Maple. | 110. Fringe Tree. |
| 88. Red Maple. | 111. <i>Catalpa speciosa</i> . |
| 89. Mountain Maple. | 112. <i>Catalpa bignonioides</i> . |

LIST OF TREES IN DOUBT.

1. Table-mountain Pine.....*Pinus pungens*
2. Ward Willow.....*Salix wardi*
3. Planer Tree.....*Planera aquatica*
4. Sweet Crab.....*Pyrus coronaria*
5. Mountain Ash.....*Pyrus americana*
6. Water Locust.....*Gleditsia aquatica*
7. Water Gum.....*Nyssa biflora*
8. Buckthorn *Bumelia*.....*Bumelia lycioides*

DOUBTFUL WHETHER TREES OR SHRUBS IN
KENTUCKY.

1. Staghorn Sumach.....*Rhus hirta*
2. Dwarf Sumach.....*Rhus copallina*
3. Poison Sumach.....*Rhus vernix*
4. Wahoo.....*Euonymus atropurpureus*
5. Blue Dogwood.....*Cornus alternifolia*
6. Mountain Laurel.....*Kalmia latifolia*
7. Sheepberry.....*Viburnum lentago*
8. Nannyberry (Black Haw).....*Viburnum prunifolium*
9. Choke Cherry.....*Prunus virginiana*
10. Clammy Locust.....*Robinia viscosa*

FOREIGN TREES THAT HAVE BECOME
SPONTANEOUS IN KENTUCKY.

1. White Poplar.....*Populus alba*
2. White Willow.....*Salix alba*
3. White Mulberry.....*Morus alba*
4. Paper Mulberry.....*Morus papyrifera*
5. Tree of Heaven.....*Ailanthus glandulosa*
6. Paulownia Tree.....*Paulownia tomentosa*
7. English Hawthorn.....*Crataegus oxyacantha*

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Three-leaved Hop Tree	100
Tree of Heaven	134
Tulip Tree	76-78
Tupelo Gum	116
Umbrella Tree	80
Viburnum	134
Wafer Ash	100
Walnut Family	26-35
Ward Willow	134
Washington Haw	134
Water Birch	39
Water Gum	134

Water Locust	134
Water Oak	66
Western Catalpa	130
White Ash	126
White Basswood	113
White Elm	69
White Mulberry	134
White Oak	46
White Pine	14
White Poplar	134
White Walnut	30
White Willow	134
Wild Black Cherry	92
Wild Yellow Plum	92
Willow Family	21-25
Willow Hickory	35
Willow Oak	66
Winged Elm	71
Witch Hazel	86
Witch Hazel Family	84-86
Yellow Birch	39
Yellow Buckeye	109
Yellow Buckthorn	112
Yellow Wood	98

